INDEX

1394 bus: Bus that connects multiple types of devices to each other outside the system unit and then a single cable attaches to the 1394 port. **4.32**

1394 port: Port that can connect multiple types of devices that require fast transmission speeds, such as digital video cameras, digital VCRs, color printers, scanners, digital cameras, and DVD drives to a single connector. Also called FireWire. **4.28,** 4.29

3Com Corporation, 9.19

3DNow!™: Technology included in AMD processors that further improves the processor's performance of multimedia, the Web, and 3-D graphics. **4.11**

A+ certification, 16.21

Abrupt cutover: A technique used to convert to the new system when the user stops using the old system and begins using the new system on a certain date. Also known as direct conversion. **14.31**

AC adapter: External power supply that converts AC power into DC power, used by some external peripheral devices such as an external modem or tape drive. **4.32,** 4.33

Accelerated Graphics Port (AGP): Bus designed by Intel to improve the speed with which 3-D graphics and video transmit. **4.31**

Acceptance test: A test performed by the end-users to check that the new system works with actual data. One of three different tests that system developers perform during the implementation phase. **14.30**

Access control: Security measure that defines who can access a computer, when they can access it, and what actions they can take while accessing the computer. **12.8**

Access privileges: DBMS procedure that defines the activities a specific user or group of users can perform on each field in the database. **13.19**

Access time (disk): The amount of time it takes the device to locate an item on a disk. **7.4**, 7.12

Access time (processor): Amount of time it takes the processor to read data, instructions, and information from memory, directly affecting how fast a computer processes data. **4.22**

Accessible information: Information available when you need it. **13.31**

Accounting software: Software used by companies to record and report their financial transactions. **3.21**

Accurate information: Correct information. **13.30**

Active Desktop™: Windows 98 interface used to set up Windows so icons on the desktop and file names in Windows Explorer worked similar to Web links. **8.18**

Active Directory (AD): Feature of Windows 2000 Server that allows network administrators to manage all network information. **8.16**

Active-matrix display: Display technology in LCD monitors and displays that uses a separate transistor for each color pixel and thus can display high-quality color viewable from all angles; also called thin-film transistor (TFT) display. **6.8,** 8.53

ActiveX: Set of object-oriented technologies by Microsoft that allows components on a network to communicate with one another. **15.32**

ActiveX control: Small program that runs on a personal computer instead of a server. **15.32**

Adobe Certified Expert (ACE), 16.18

Adapter: Circuit board that fits in an expansion slot. **4.23**

Adapter card: Circuit board that fits in an expansion slot. **4.23**

Add-in: Circuit board that fits in an expansion slot. **4.23**

Add-on: Circuit board that fits in an expansion slot. **4.23**

Address: Unique number that identifies the location of a byte in memory. **4.16**

Address book (e-mail): List of names and e-mail addresses, contained in an e-mail program. **2.31**

Address book (groupware), 3.33

Address book (personal information manager): Component of personal information manager software used to enter and maintain names, addresses, and telephone numbers of customers, coworkers, family members, and friends. **3.20**

Address bus, 4.29

Adobe systems, 3.23

ADSL (asymmetric digital subscriber line): Type of DSL that supports faster transfer rates when receiving data (the downstream rate) than when sending data (the upstream rate). **9.26**

Advanced Micro Devices (AMD), 4.10, 4.11

Advanced Research Projects Agency (ARPA): Agency of the U.S. Department of Defense that started a networking project that evolved into the Internet. **2.3**-4

Advanced transfer cache: Type of L2 cache built directly on the processor cache; the most common size is 256 KB. **4.20**

Advocacy Web page: Web page containing content that describes a cause, opinion, or idea. **2.16**-17

Advertisers
  privacy and, 12.27-28, 29
  Web, 10.10
  wireless, 9.38

Adware: Spyware used by Internet advertising firms to collect information about a user's Web browsing habits. **12.31**

After image: Copy of a record after a change. **13.20**

Agent: Element of a data flow diagram drawn as a square that identifies an entity outside the scope of the system that sends data into the system or receives information from the system. Also called source. **14.17**

Airline reservations, online, 10.16

Allen, Paul, 3.5, 3.7

All-in-one computer: Computer that houses the system unit in the same physical case as the monitor, used to save space. **1.21, 4.3**

Allocation unit, *see* Cluster

Alpha processor: Processor originally developed by Digital Equipment Corporation that is used primarily in workstations and high-end servers. **4.10**

Alphabetic check: Validity check that ensures only alphabetic data is entered into a field. **13.9**

Amazon.com, 10.13, 12.30

America Online (AOL), 1.18, 2.6, 2.17

American Standard Code for Information Interchange (ASCII): The most widely used coding system to represent data; used by most PCs and mid-range servers. **4.14**

Americans with Disabilities Act (ADA): Federal law that requires any company with 15 or more employees to make reasonable attempts to accommodate the needs of physically challenged workers. **5.31**

Analog: Continuous signals that vary in strength and quality; example is human speech. **4.13,** 5.21

Analog signal: Signal that consists of a continuous electrical wave. **9.3**

Analysis phase: Second phase in the SDLC that consists of two major tasks: conducting a preliminary investigation, and performing detailed analysis. 14.2, **14.13**-21

Andreessen, Marc, 16.7

Animated GIF: Popular type of animation that uses computer animation and graphics software to combine several images into a single GIF file. **2.19**

Animation: Appearance of motion created by displaying a series of still images in rapid sequence. **2.19,** 6.3

Annotation symbol: In a program flowchart, a symbol that explains or clarifies logic in the solution algorithm. Also called comment symbol. **15.10**

Anonymous FTP: Allows anyone to transfer some, if not all, available files using FTP. **2.33, 9.24**

Anti-spam program: Program that attempts to remove spam. **12.31**

Antivirus program: Utility program that prevents, detects, and removes viruses from a computer's memory, storage devices, or incoming files; also can protect against worms and Trojan horses. **3.3,** 9.29, **12.5**

Anytime Anywhere Learning program: Program from Microsoft and Toshiba that provides teachers and students with notebook computers equipped with the Microsoft Office suite and the capability to access the Internet. **11.10**

Apple Computer, Inc., 8.21

Applet: Short program that runs inside of another program that usually runs on the client not on the Web server, but is compiled. **15.32**

Application, *see* Application software

Application Developer, Oracle Developer Release 1 Track, 16.24

Application generator: A program that allows an application to be built with writing extensive code. Also called a program generator. **15.27**

APPLICATION key, 5.5

Application program, *see* Application software

Application service provider (ASP): Third-party company that manages and distributes software and services on the Internet. Instead of installing software on a computer, the user runs the programs from the Internet. Some ASPs provide access to the software at no cost and others charge for use of the program. **1.14**, **3.35**
  categories of, 3.36

Application software: Programs that are used to perform specific tasks, such as: productivity/business tools; to assist with graphics and multimedia projects; to support household activities, for personal business, or for education; and to facilitate communications and include word processing software, spreadsheet software, database software, and presentation graphics software. Also called a software application or an application. **1.13, 3.2**-37
  categories of, 3.2
  certifications, 16.18
  communications, 3.32-33
  memory and, 4.16
  operating system managing, 8.8-9
  starting, 3.4-7
  uninstalling, 8.29

Appointment calendar (groupware), 3.33

Appointment calendar (personal information manager): Component that allows scheduling of activities for a particular day and time. **3.20**

Archival backup, *see* Full backup

Arithmetic operations: Operations of the arithmetic/logic unit, including addition, subtraction, multiplication, and division. **4.6**

Arithmetic/logic unit (ALU): Component of the CPU that performs arithmetic, comparison, and logical operations. 4.5, **4.6**-7

ARPANET: Network built by the Advanced Research Projects Agency that linked scientific and academic researchers. **2.4**

Arrow keys: Keys on a keyboard: one pointing up, one pointing down, one pointing left, and one pointing right. **5.4**

Article: Previously entered message in a newsgroup. **2.33**

Articulation agreement: An agreement between a community college and college or university that ensures students will receive credit for most of the courses at the community college level if transferring to the college or university. **16.13**

Artificial intelligence (AI): Application of human intelligence to computers. **13. 41**

ASCII, *see* American Standard Code for Information Interchange

Assembler: Program that converts assembly language source code into machine language the computer understands. **15.17**

Assembly language: Second-generation programming language that has instructions written using symbolic instruction codes. **15.16**

Associate and Senior Network Specialist Technician (NNT), 16.20

Association for Computing Machinery (**ACM**): A scientific and educational organization, composed of professionals and students working and interested in computer science and education, dedicated to advancing information technology. **16.14**

Association of Information Technology Professionals: Professional association of programmers, systems analysts, and information processing managers with benefits that include meetings; workshops, seminars, and conventions; publications; and programs that help with continuing education needs. **16.14**
Asymmetric encryption, *see* Public key encryption
ATA: An earlier type of EIDE controller was ATA. **7.13**
Attribute: Name given by a developer to a field in a relational database. **13.22**
Attributes (objects): The data elements of an object. Also called variables. **15.20**
Audio: Any music, speech, or other sound stored and produced by a computer. **2.20, 3.25, 6.3**
  streaming, 2.21
  word processing software, 3.8
Audio CDs, 7.17, 7.23, 24
Audio chats, 6.3
Audio clips, 3.18, 6.3
Audio editing software: Software used to modify audio clips and produce studio quality soundtracks. **3.25**
Audio files, 5.16
Audio input: Process of entering any sound into a computer such as speech, music, and sound effects. **5.16**
Audio output device: Output component that produces music, speech, or other sounds, such as beeps. Two commonly used audio output devices are speakers and headsets. **6.23**
Audit trail: A log maintained by the computer that records in a file both successful and unsuccessful access attempts for accessing the computer. Also called log. **12.13**
Authorware, *see* Multimedia authoring software
Authorware: Multimedia authoring software package from Macromedia that provides the tools developers need to build interactive multimedia training and educational programs. **15.40**
Auto PC: Device mounted onto a vehicle's dashboard that is powered by Windows CE; provides driver information such as driving directions, traffic conditions, weather, and stock quotes; access to e-mail; radio or audio CD; and shares information with a handheld or notebook computer. **8.26**
AutoCAD Certified Professional (ACP), 16.18
Automated teller machine (ATM): Self-service banking machine that provides access to a bank account by connecting to a host computer through a telephone network. **6.29**
Auxiliary storage, *see* Storage
Application program
  rental of, 10.8-10
  virus and, 12.2, 12.4
Application service providers, 10.10
Archival backup, *see* Full backup
Artificial intelligence (AI): Application of human intelligence to computers; the computer senses a human's actions and, based on logical assumptions and prior experience, take the appropriate action to complete a task. **11.28**
Asymmetric key encryption, *see* Public key encryption
Asynchronous: Communications that are not real time. **9.7**
Asynchronous transfer mode (ATM): Service that carries voice, data, video, and multimedia at extremely high speeds, used by telephone networks, the Internet, and other networks with large amounts of traffic. **9.27**
Audit trail: File that contains records of successful and unsuccessful access attempts. Also called log. **12.13**
Authentication: Verification that a user is who they claim to be. **12.8**-13
Automated teller machine, 10.4

B2B, *see* Business to business
Back up: Process of making a copy of a file. **12.19**
Backbone (bus), *see* Bus
Backbone (Internet): Communications lines that carry the heaviest amount of traffic on the Internet. **2.7**
Back end: Application that supports a front end. **13.12**
Background: When running multiple applications, describes the applications that are running, but not in use. **8.9**
Background checks, 13.19
Backup: Duplicate of a file, program, or disk that can be used if the original is lost, damaged, or destroyed. **7.9,** 8.61, **12.19**-20, **13.20**
  CD-RW, 7.23
  database, 13.20
  Internet hard drive, 7.16
  online, 10.11, 12.21
  removable disk, 7.14
  uninfected, 12.6
Backup plan: Part of a disaster recovery plan, the specification of how a company uses backup files and equipment to resume information processing. **12.21**
Backup procedures: Regular plan of copying and storing important data and program files, **12.20**
Backup utility: Program used to copy, or backup, selected files or an entire hard disk onto another disk or tape. **8.30**
Backward recovery, *see* Rollback
Band printer: Line printer that prints fully formed characters when hammers strike a horizontal, rotating band that contains shapes of numbers, letters of the alphabet, and other characters. **6.15**
Bandwidth: Width of the communications channel. **9.31**
Banking
  ATM and, 6.29
  e-money and, 7.29
  magnetic-ink character recognition and, 5.30
  online, 3.28, 10.14, 11.14-15
Banner ads: Online advertising at another Web site; the advertisements display a brief message and are linked to the advertiser's Web site. **10.25**
Bar chart, *see* Column chart
Bar code: Product identification code that consists of a set of vertical lines and spaces of different widths, representing data that identifies a manufacturer and item. **5.28**
  Web, 5.30, 11.24
Bar code scanner: Scanner that uses laser beams to read bar codes. **5.28**
Baseband: Media that can transmit only one signal at a time. **9.32**
BASIC (**B**eginner's **A**ll-purpose **S**ymbolic **I**nstruction **C**ode): Programming language developed in the mid-1960s for use as a simple, interactive problem-solving language; easy to learn and use. **15.22**
Basic input/output system (BIOS): Sequence of instructions a computer follows to load the operating system and other files when the computer is first turned on. **4.20**
Batch processing: Transaction processing system in which a computer collects data over a period of time and processes all transactions later, as a group. **13.35**
Battery power
  CMOS and, 4.21
  handheld computers, 8.56
  notebook computer, 8.54
Bay: Open area inside the system unit in which additional equipment can be installed; commonly called a drive bay. The two types of drive bays are: external, or exposed drive bay and internal, or hidden drive bay. **4.32**
Beans: Code segments used to create Java applications; platform independent, enabling the code to be run on any computer or operating system. Also called JavaBeans. **15.35**
Before image: Copy of a record prior to a change. **13.20**
Benchmark test: Measure of the performance of hardware or software. **14.25**
Berners-Lee, Tim, 2.4
beta products: Vendor products still in the testing stage. **16.26**
Bezos, Jeff, 10.13
Binary system: Number system that has just two unique digits, 0 and 1, called bits. **4.14**
Biometric device: Device that authenticates a person's identity by verifying personal characteristics. **12.10**
Biometric identifier: Physical or behavioral characteristic used to authenticate a person's identity. **12.10**
BIOS (basic input/output system): Firmware that contains a computer's startup instructions. **8.5**-6
Bit: Short for **b**inary dig**it,** the smallest unit of data a computer can represent. A bit represents one of two values, on or off. Eight bits are grouped together to form a byte. **4.14**, 13.4
  bus and, 4.30
Bit depth: The number of bits a video card uses to store information about each pixel; determines the number of colors the video card can display. Also called color depth. **6.10**
Bits per second (bps): Measure of data transfer rate; the number of bits a line can transfer in one second. **9.26**
Blackout: Complete power failure. **12.18**
Bluetooth™: Technology that uses short-range radio waves to transmit data among Bluetooth™-enabled devices. **9.35,** 11.1, **11.14**
Board: Circuit board that fits in an expansion slot. **4.23**
Books
  electronic, 11.6, 11.22
  sales information, 13.37
Boot disk, *see* Emergency repair disk
Boot drive: Drive from which a personal computer boots (starts), in most cases Drive C. **8.6**
Boot sector virus: Virus that executes when a computer boots up because it resides in the boot sector of a floppy disk or the master boot record of a hard disk. Also called a system virus. 12.2, **12.4**
Booting: Process of starting or restarting a computer. **8.4**
Bot, *see* Spider
Bot, *see* Network agent
Braille printer: Printer that outputs information in Braille onto paper. **6.30**
Bricklin, Dan, 3.14
Brick-and-mortar, *see* Bricks-and-mortar
Bricks-and-mortar: Company that has a physical location. **10.3**
Broadband: Media that can transmit multiple signals simultaneously. **9.32**
Broadcast radio: Wireless transmission medium that distributes radio signals through the air over long distances. **9.35**
Broadband modem, *see* Cable modem
Brokering: B2B site that acts as a middleman by negotiating the contract of a purchase and a sale. **10.7**
Brownout: Prolonged undervoltage. **12.18**
Browser, *see* Web browser
B-to-B, *see* Business-to-business
B-to-C, *see* Business-to-consumer
Budgeting, home users and, 11.3
Buffer: Area of memory or storage in which items are placed while waiting to be transferred to or from an input or output device. **8.11**
Bugs, 15.14, 15
Bus (computer): Electrical channel that allows the various devices inside and attached to the system unit to communicate with each other. Buses transfer bits and consist of two parts: a data bus, which transfers actual data and an address bus, which transfers information about where the data should go in memory. Two types of buses are system buses and expansion buses. **4.29**-32
Bus (network): Physical cable that connects the computers and other devices in a bus network and transmits data, instructions, and information in both directions; also called a backbone. Used for LANs. **9.17**

Bus network: Network topology that consists of a single central cable, to which all computers and other devices connect. **9.16**
Bus width: Size of a bus; determines the number of bits that a computer can transmit at one time. **4.29**-30
Business-to-business (B-to-B or **B2B):** E-commerce that occurs when businesses provide goods and services to other businesses. **2.25, 10.6**, 10.6-8
Business-to-consumer (B-to-C or **B2C):** E-commerce that consists of the sale of goods to the general public. **2.25, 10.4**
Business-to-employee (B-to-E or B2E): Use of intranet technology to handle activities that take place within a business. Also intrabusiness e-commerce. **10.8**
Business/marketing Web page: Web page containing content that promotes or sells products or services. **2.17,** 10.4-5
Business Software Alliance (BSA): Association of major U.S. software companies formed to promote a better understanding of software piracy problems and, if necessary, to take legal action. **12.15**
Button: Graphical element that a user activates to cause a specific action to take place. **3.4**
Byte: Eight bits grouped together as a unit, representing a single character in the computer, such as numbers, uppercase and lowercase letters of the alphabet, punctuation marks, and others such as the letters of the Greek alphabet. **4.14,** 4.16, 13.4
Bytecode: Instead of object code, Java source code is compiled into bytecode; a Java interpreter executes bytecode. **15.34**

C#: Programming language that combines features of C and C++ and is best suited for development of Web applications. **15.25**
C: Programming language developed in early 1970s; originally designed for writing system software, but used today for a variety of software programs. **15.25**
C++: Object-oriented programming language developed in the 1980s; includes all the elements of the C programming language plus additional features for working with objects, classes, events, and other object-oriented concepts. **15.25**
C2C, *see* Consumer to consumer
Cable modem: Modem that sends and receives data over the cable television network, providing high-speed Internet connections. Also called a broadband modem. **2.6, 9.29**
  DSL vs., 9.29
Cable television
  connecting to Internet, 9.26, 9.29
  wiring, 9.34
Cache: Type of memory that improves processing time by storing the contents of frequently accessed RAM locations. When the processor needs an instruction or data, it first searches the cache, then it searches the more slowly accessed RAM. Two types of cache are memory cache and disk cache. **4.19,** 7.12
Cache controller: Controller that manages cache and thus determines which items cache should store. On newer processors, the cache controller is part of the processor. **7.12**
Cache store, *see* Memory cache
Calculations, spreadsheet, 3.12, 13
Callback system: Access control method used to authenticate remote users. A computer can be connected to only after it calls a user back at a previously established telephone number. **12.12**
Cam, *see* Web cam
Camera
  digital, *see* Digital camera
  digital video, 5.21-24
  PC video, 5.22
  Web cams, 5.23
Capacity: The number of bytes (characters) a storage medium can hold. **7.4**
Card: Circuit board that fits in an expansion slot. 4.3, 4.4, **4.23**
  expansion, *see* **Expansion card**
  storage media, 1.8
Careers, 1.27, 16.1-31
  certification and, 16.16-31
  choices, 4.13
  computer and IT teachers, 16.31
  computer technician, 7.31
  consulting, 16.11
  data communications analyst, 9.39
  database management, 13.41
  education and training, 16.10
  equipment industry, 16.4
  graphics designer/illustrator, 6.31
  help desk, 1.37
  IT consultant, 11.37
  IT department, 16.8
  network administrator, 8.30
  network security specialist, 12.35
  preparation, 16.11-15
  professional organizations, 16.14
  programmer, 15.5, 15.41
  project management, 14.33
  sales, 16.10
  service and repair, 16.10-11
  software engineer, 4.35
  software industry, 16.4-6
  Web developer, 10.25
  Webcasting, 5.33
  Webmaster, 2.37
Carpal tunnel syndrome (CTS): Inflammation of the nerve that connects a forearm to the palm of a wrist. **11.31**
Cars, global positioning systems and, 9.10-11
Cascading style sheets (**CSS**): Contains description of a document's characteristics including the formats for how a particular object should display in a Web browser. **15.36**
Case control structure: A variation of an if-then-else control structure that can yield one of three or more possibilities. **15.7**
CASE tools, 14.29
CASE workbench, 14.29
Cathode ray tube (CRT): Display device that is a large, sealed, glass tube in a CRT monitor. The front of the tube is the screen. Tiny dots of phosphor material coat the screen and each dot consists of a red, a green, and a blue phosphor. The three dots combine to make up each pixel, which is a single point in an electronic image. **6.5**
CD recorder: Device used to write on a CD-R. **7.22**
CD-R (compact disc-recordable): Multisession compact disc that can be recorded onto only once, but can be read from as many times as a user wishes. One part of the disc can be written on at one time and another part at a later time. **7.22**
CD-R drive: Drive that can read and write both audio CDs and standard **CD-ROM** (**compact disc read-only memory):** Silver-colored compact disc that uses the same laser technology as audio CDs for recording music. In addition to audio, a CD-ROM can contain text, graphics, and video. The manufacturer writes, or records the contents of standard CD-ROMs. You only can read the contents of these discs, not erase or modify their contents. 1.8, **7.20, 7.22**
  notebook computer, 8.54
CD-ROM drive: Drive that reads CD-ROMs. 1.8, **7.20**
CD-ROM jukebox: Device that holds hundreds of CD-ROMs that can contain application programs and data. Also called a CD-ROM server. **7.27**
CD-ROM player: Device that reads CD-ROMs. **7.20**
CD-RW (compact disc-rewritable): Erasable compact disc that can be written on multiple times; originally called an erasable CD (CD-E). 1.8, **7.22**-24
CD-RW drive: Drive that writes on and reads CD-RW discs. **7.22**
Celeron™: Intel processor used by less expensive, basic PCs. **4.10**
Cell: The intersection of a column and row in a spreadsheet. **3.12**
Cellular radio: Form of broadcast radio used widely for mobile communications, specifically wireless modems and cellular telephones. **9.36**-37, 9.38
Cellular telephone: Telephone device that uses radio signals to transmit voice and digital data messages. **9.36**-37
Central processing unit (CPU): Component of the system unit that interprets and carries out the basic instructions that operate a computer. The CPU significantly impacts overall computing power and manages most of a computer's operations. Most of the devices connected to the computer communicate with the CPU in order to carry out a task. The CPU contains the control unit and the arithmetic/logic unit; these two components work together to perform processing operations. Also called a processor. **1.6,** 4.4, **4.5**-13
  installation and upgrades, 4.11-12
  memory and, 7.3
  personal computer, 4.9-11
  purchasing computer and, 8.49
  starting computer, 8.5
Certificate authority (CA): Authorized company or person that issues and verifies digital certificates. Also called an issuing authority (IA). **12.23**
Certification: A way for employers to ensure a level of competency, skills, or quality in a specific area. **16.16**
  benefits, 16.24-26
  examinations, 16.29-30
  guide to, 16.17-24
  preparing for, 16.28
  types of, 16.16-17
Certified Computing Professional (CCP), 16.19
Certified Internet Professional, 16.23
Certified Internet WebMaster (CIW), 16.23
Certified Java Developer, 16.20
Certified Java Programmer, 16.20
Certified Lotus Specialist (CLS), 16.18
Certified Novell Associate (CAN), 16.22
Certified Novell Engineer (CNE), 16.22
Certified Sybase Professional – Database Administrator (CSP-DBA), 16.24
Certified System Administrator, 16.18
Certified Web Professional (CWP), 16.23
CGI (Common Gateway Interface) script: Program that manages the sending and receiving of data between the front end and the database server. **13.29**
CGI program: Program that manages the sending and receiving across the common gateway interface CGI on a Web server. Also called CGI script. **15.33**
CGI script: Program that manages the sending and receiving across the common gateway interface CGI on a Web server. Also called CGI program. **15.33**
Channel: Communications path between two devices. **9.31**-39
Character: Number, letter, punctuation mark, or other symbol that a byte represents. **13.4**
Charting: Feature of spreadsheet software that allows the display of data in a chart; charts show the relationship of data in graphical form. **3.14**
Chassis, *see* System unit
Chat: Real-time typed conversation that takes place on a computer. **2.35**
Chat client: Software that allows connection to a chat server to start a chat session; included in most Web browsers. **2.36, 3.32**
Chat room: Service that permits users to chat with each other in real time via the computer while connected to the Internet. As a line of text is typed, the entered words display on the computer screens of other people in the same chat room. Chats typically are specific to a certain topic, such as computers or cooking. Some chat rooms support voice chats and video chats, where people can be seen and heard during the chat. **2.35, 3.32, 9.6**-7
  abbreviations, 9.8
  netiquette, 9.8

Check digit: Number(s) or character(s) that is appended to or inserted into a primary key value, to confirm the accuracy of the primary key value. **13.10**
Child: Most recent copy of a file. **12.21**
Children, Internet protections for, 12.34
Chip: Small piece of semiconducting material, usually no bigger than one-half-inch square, on which integrated circuits are etched. 1.6, **4.4**
  CMOS, 4.21
  flaws, 4.22
  RAM, 4.18-20
  ROM, 4.20
Chip for chip upgrade: Processor upgrade that replaces the existing processor chip with a new one. **4.11**
Ciphertext: Encrypted (scrambled) data. **12.16**
CISC (complex instruction set computing): Design used by the CPU that supports a large number of instructions. **4.6**
Cisco Certified Internetwork Expert (CCIE), 16.21, 16.22, 16.23
Cisco Certified Network Professional (CCNP), 16.22
Class: Larger category of objects that an object may be a part of. **15.20**
ClearType: Technology developed by Microsoft for LCD screens, such as e-books, to make onscreen reading as natural as reading from printed material. **6.7**
Click: Process of pressing and releasing a button on the mouse that activates an object on the screen. **3.4**-5
Clicks-and-mortar: Company that has a bricks-and-mortar location as well as an online presence. **10.3**
Click stream: Collection of every action users make as they move through a Web site. **13.39**
Click-through: Occurs when a visitor clicks an advertisement to move to an advertiser's Web page. **10.25**
Client: Computer on a network that relies on servers for resources such as files, devices, processing power, and storage. **2.6, 8.15**
Client operating system: Operating system that works in conjunction with a network operating system. **8.17**
Client/server LAN: Network in which one or more computers act as a server and the other computers on the network can request services from the server. **9.14**
Clients: Computers on a network that rely on a server to control access to the hardware and software and to provide a centralized storage area for programs, data , and information. **9.14**
Clip art: Collection of drawings, diagrams, and photographs that can be inserted into documents. **3.8**
Clip art/image gallery: Collection of clip art and photographs that can be used in all types of documents. Many clip art/image galleries also provide fonts, animations, sounds, video clips, and audio clips. **3.30**
Clip gallery: Clip art images, pictures, video clips, and audio clips, typically organized by categories. **3.18**
Clipboard: Temporary storage location for portions of a document during cut, copy, and paste operations. **3.10**
Clipper chip: Tamper-resistant PC processor that contained an encryption formula, originally proposed by the U.S. government, but abandoned due to widespread opposition. **12.17**
Clock cycle: Describes each tick generated by the system clock. **4.8**
Clock rate, *see* Clock speed
Clock speed: The speed at which a processor executes instructions, measured in megahertz and gigahertz. Also called clock rate. **4.8,** 4.11, 4.30
Cluster: Smallest unit of disk space that stores data, consisting of two to eight sectors. Also called an allocation unit. **7.8**
CMOS, *see* Complementary metal-oxide semiconductor memory
Coax, *see* Coaxial cable
Coaxial cable: Physical transmission medium that consists of a single copper wire surrounded by at least three layers: (1) an insulating material, (2) a woven or braided metal, and (3) a plastic outer coating. Also called coax. **9.33**
COBOL (**CO**mmon **B**usiness-**O**riented **L**anguage): Widely used procedural programming language for business applications developed in the early 1960s. **15.24**
Codd, E.F., 13.22
Code
  Java, 15.34-35
  program, 15.8, 9
  schemes, 4.14-15
  spaghetti, 15.9, 16
Code of conduct: Written guideline that helps determine whether a specific computer action is ethical or unethical. **11.37**
Coding: Third step in program development life cycle that involves translating the solution algorithm into a programming language and entering the programming language code into the computer. **15.13**
Cold boot: Process of turning on a computer after it has been powered off completely. **8.4**
Collaborate: Process of working with other users connected to a server. **9.9**
College education, 16.12-13
College scholarships, 13.31
Color depth, *see* Bit depth
Color library: Standard set of colors used by designers and printers to ensure that colors will print exactly as specified. **3.23**
Column: Name given by a user to a field in a relational database. **13.22**
Column chart: Chart that displays bars of various lengths to show the relationship of data. The bars can be horizontal, vertical, or stacked on top of one another. Also called bar chart. **3.14**
COMDEX: One of the larger technology trade shows that brings together more than 2,100 vendors and 200,000 attendees. **16.14**
Command: Instruction that causes a computer program to perform a specific action. **3.5, 5.3,** 5.4
Command language: Set of commands used to interact with a computer when working with a command-line interface. **8.8**
Command-line interface: Interface that works when user types keywords or presses special keys on the keyboard to enter data and instructions. **8.8**
Comment symbol: In a program flowchart, a symbol that explains or clarifies logic in the solution algorithm. Also called annotation symbol. **15.10**
Comments: Documentation of program code internally in the program. Also called remarks. **15.13**
Commerce server, *see* E-commerce server
Commercial off-the-shelf software: Pre-written software available for purchase and available for different computers. Also called packaged software. Two types of packaged software are horizontal application software and vertical application software. **14.19**
Common gateway interface (**CGI**): Communications standard that defines how a Web server communicates with outside sources, such as a database. **15.33**
Communications: Process in which one computer transfers data, instructions, and information to another computer(s). 1.5, 1.9-10, **9.2**-39
  asynchronous, 9.7
  e-mail impact on, 9.5
  home users and, 11.3, 11.4-5
  network technologies, 9.18-20
  networks and, 9.11-23
  purchasing computer and, 8.49
  software for, 3.32-33
  synchronous, 9.7
  telephone network, 9.25-27
  use of, 9.4-11
Communications channel, 9.2, 9.3, 9.31-39
Communications Decency Act: Federal law passed in 1996 that makes it a criminal offense to distribute indecent or patently offensive material online. The Supreme Court declared the law unconstitutional in 1997 because it violated the guarantee of free speech. **12.34**
Communications device: Any type of hardware capable of transmitting data, instructions, and information between a sending device and a receiving device, enabling users to communicate and to exchange items. **1.8,** 9.2, 9.3, **9.27**-30
Communications lines, Internet and, 2.7
Communications satellite: Space station that receives microwave signals from an earth-based station, amplifies (strengthens) the signals, and broadcasts the signals back over a wide area to any number of earth-based stations. **9.38**-39
Communications software: Programs used to establish a connection to another computer or network, and manage the transmission of data, instructions, and information. **9.23**-24
Compact disc (CD): Flat, round, portable, metal storage medium usually 4.75 inches in diameter and less than one-twentieth of an inch thick that store information using microscopic pits (indentations) and land (flat areas) that are in the middle layer of the disc. A high-powered laser light creates the pits and a lower-powered laser light reads items from the compact disc by reflecting light through the bottom of the disc. The reflected light is converted into a series of bits the computer can process. Compact discs are available as CD-ROM, CD-R, CD-RW, and DVD-ROM. A compact disc also is called an optical disc. 1.8, 7.4, **7.17**-25
Compact disc read-only memory, *see* CD-ROM
Compaq, servers and, 9.14
Comparison operations: Operations of the arithmetic/logic unit that involve comparing one data item to another to determine if the first item is greater than, equal to, or less than the other item. **4.6**
Compiler: Converts the entire source program into machine language before executing it. **15.18**
Complementary metal-oxide semiconductor memory (CMOS): Type of memory chip that stores configuration information about a computer, needed when the computer is turned on. CMOS chips use battery power to retain information even when power to the computer is turned off. **4.21,** 8.6
Completeness check: Validity check that verifies that a required field contains data. **13.10**
Component: Another term for object, which is an item that can contain both data and the procedures that read or manipulate that data. **15.29**
Computer: Electronic machine, operating under the control of instructions stored in its own memory, that can accept data, manipulate the data according to specified rules, produce results, and store the results for future use. **1.4**
  categories of, 1.19-25
  components of, 1.5-8
  examples of usage, 1.28-35
  introduction to, 1.1-37
  leasing, 1.23
  living with, 11.2-26
  power of, 1.8-10
  purchasing, 1.23
  security and, *see* Security
  society and, 11.1-37, 12.1-35
  starting, 8.4-6
  unauthorized access and use, 12.7-13
  upgrading, 4.12
Computer addiction: Growing health problem that occurs when a computer consumes someone's entire social life. **11.32**
Computer and IT teachers, 16.31
Computer crime: Any illegal act involving a computer. **12.2**
Computer engineer, 16.11, 16.12
Computer engineering CE, 16.13
Computer equipment industry, 16.4
Computer ethics: Moral guidelines that govern the use of computers and information systems. **11.34**

Computer Fraud and Abuse Acts: Federal laws passed in 1984 and 1994 that outlaw unauthorized access to federal government computers and the transmission of harmful computer code such as viruses. **12.32-**33
Computer information systems education, 16.12
Computer literate: Phrase that means a user has knowledge and understanding of computers and their uses. **1.4,** 1.9
Computer Matching and Privacy Protection Act: Federal law passed in 1988 that regulates the use of government data to determine the eligibility of individuals for federal benefits. **12.32**
Computer operator, 16.9
Computer output microfilm (COM) recorder: Device that records images on microfilm. **7.30**
Computer program: Series of instructions that tells a computer how to perform the tasks necessary to process data into information; also called a program. **1.10-**15, **5.3, 15.2**
  application, *see* Application software
  communications, 9.23-24
  custom, 1.14
  downloading, 1.14, 15
  e-commerce, 10.18, 24
  home users, 1.29
  laser printers, 6.18
  license agreement, 12.14
  packaged, 1.13
  productivity, 3.7-21
  purchasing, 1.13-15
  purchasing computer and, 8.49
  registration, 8.59
  running, 1.11
  sharing using networks, 9.11
  site license, 9.11, 12.15
  smart, 11.28-29
  system, 1.12
  viruses, 12.2
Computer programmer: Someone who writes software programs; also called a programmer. **1.14,** 16.9
Computer publications, 16.15
Computer science (**CS**): Programs that stress the theoretical side of programming, with emphasis on systems programming versus applications programming. Also called software engineering (SE) programs. **16.13**
Computer science education, 16.12
Computer science engineer/software engineer, 16.9
Computer science (CS) programs, *see* Software engineering
Computer security, *see* Security
Computer security plan: Summary in writing all of the safeguards that are in place to protect a company's information assets. **12.22**
Computer security risk: Any event or action that could cause a loss of or damage to computer hardware, software, data, information, or processing capability. **12.2-**21
Computer support specialist, 16.11
Computer technician/computer service technician, 7.31, 16.9
Computer vision syndrome (CVS): Eyestrain and vision problems related to computer usage. 6.11, **11.31**
Computer-aided design (CAD) database: Database that stores data about engineering, architectural, and scientific designs. **13.26**
Computer-aided design (CAD) software: Sophisticated type of application software used to create engineering, architectural, and scientific designs. **3.22**
Computer-aided instruction, *see* Computer-based training
Computer-aided software engineering (CASE): Computer software tools designed to support one or more activities of the SDLC. **14.29**
Computer-aided surgery (CAS): Use of computer simulations to assist in learning surgical techniques. **11.20**
Computer-based training (CBT): Type of education that helps students learn by using computers and completing exercises with instructional software, typically consisting of self-directed, self-paced instruction on a topic. Also called computer-aided instruction (CAI). **3.30, 11.6-**8, 11.10, 11.20, **15.38, 15.39**
Computerized adaptive testing (**CAT**): A new technique used in testing that analyzes a person's responses while taking a test. **16.30**
Configuration information, 8.6
Connector: Port hardware that joins a cable to a device. Connectors are male or female. 4.3, 4.4, **4.26**
  identifying, 8.59
  monitors, 6.10
Consistency check: Validity check that tests if the data in two or more associated fields is logical. **13.9**
Construct: A design that determines the logical order of program instructions. Also called control structure. **15.6**
Consultant: A person who draws upon his or her experiences to give advice to others. 14.24, **16.11**
Consumer to consumer (C-to-C or **C2C):** E-commerce that occurs when one consumer sells directly to another, such as in an online auction. **2.25, 10.6**
Context diagram: Top-level data flow diagram that identifies only the major process; that is, the system being studied. **14.17**
Context-sensitive: Refers to Help information that relates to the current task being attempted. **3.36**
Context-sensitive menu, *see* Shortcut menu
Continuous speech: Process of speaking in a flowing conversational tone, which is recognized by most voice recognition software. **5.15**
Continuous-form paper: Paper used by dot-matrix printers in which each sheet of paper is connected together. **6.14**
Control structure: A design that determines the logical order of program instructions. Also called a construct. **15.6-**8
Control unit: Component of the CPU that directs and coordinates most of the operations in the computer, interpreting each instruction issued by a program and then initiating the appropriate action to carry out the instruction. **4.5**
Controlling: Management activity that measures performance and takes corrective action. **13.32**
Cookie: Small file that a Web server stores on a user's computer that typically contains data about the user, such as the user's name or viewing preferences. The cookie is sent to the computer when a Web site is browsed, then stored on the computer's hard disk. The next time the Web site is visited, the browser retrieves the cookie from the hard disk and sends the data in the cookie to the Web site. 10.24, **12.28-**30
Coprocessor: Special processor chip or circuit board that assists the processor in performing specific tasks, thereby increasing application speed. **4.13**
Copyright: Exclusive rights of authors and artists to duplicate, publish, and sell their material, protecting any tangible form of expression. 2.23, **11.36,** 12.14
CORBA (**Common Object Request Broker Architecture**): Programming standard that defines how objects in separate programs on a network communicate with each other. **15.21**
Cordless keyboard: Battery-powered keyboard that transmits data using wireless technology, such as radio waves or infrared light waves, communicating with a receiver that attaches to a port on the system unit. **5.5**
Cordless mouse: Battery-powered mouse that transmits data using wireless technology, such as radio waves or infrared light waves. Also called wireless mouse. **5.8**
Cost/benefit feasibility: Measures whether the lifetime benefits of the proposed information system will be greater than its lifetime costs. Also called economic feasibility. **14.7**
Cost-effective information: Information that costs less to produce than the value of the resulting information. **13.31**
Counter: Tracks the number of visitors to a Web site. **15.32**
Courseware: Interactive computer-based training CBT software usually available on CD-ROM or DVD-ROM or shared over a network. **15.39**
CPU, *see* Central processing unit
Cracker: Person who tries to access a computer or network illegally. **12.7**
Crawler, *see* Spider
Creating: Process of developing a document by entering text or numbers, inserting graphical images, and performing other tasks using an input device. **3.10**
Credit reports, 11.35, 12.33
Crime, computer, 12.2, 12.31
Criteria: Restrictions data must meet in a query. **3.17**
Cross-platform: Application that runs identically on multiple operating systems. **8.4**
CRT monitor: Monitor that is similar to a standard television set because it contains a cathode ray tube. **6.5,** 6.10
C-to-C, *see* Consumer to consumer
CueCat, 11.24
Currency: Field data type that contains dollar and cent amounts. **3.16, 13.5**
Cursor: Input device used with a graphics tablet that looks similar to a mouse, except it has a window with cross hairs, so the user can see through to the tablet. **5.13**
Custom software: Software written by a programmer that is a tailor-made program developed at a user's request to perform specific functions. **1.14**, **14.20,** 15.3
Cybercafé: Coffee house or restaurant that provides Web access to its customers. **14.11**
Cybercrime: Online or Internet-based illegal acts. **12.2**
Cybersnooping, 13.25
Cylinder: The location of a single track through all platters on a hard disk. **7.11**

Data: Collection of raw unprocessed facts, figures, and symbols, processed by a computer to create information. In addition to words and numbers, data also includes sounds, images, and video. **1.4, 5.3, 13.2**
  electronic data interchange, 10.4
  hierarchy of, 13.4-5
  maintaining, 13.6-10
  representation, 4.13-14
  security, *see* Security
  sharing, 9.11, 13.13
  traveling the Internet, 2.6-7
  validation, 13.9-10
Data bus, 4.29
Data communications analyst, 9.39, 16.9
Data conversion: Conversion of existing manual and computer files so they can be used by a new system. **14.32**
Data dictionary (database): DBMS element that contains data about each file in the database and each field within those files. Sometimes called a repository or metadata. **13.14-**15, 14.27, 15.4
Data dictionary (system development): Section of the project dictionary that stores a data item's name, description, and other details about each data item. **14.19**
Data encryption standard (DES): Most popular private key encryption system, used by the U.S. government. **12.16**
Data entry form, *see* Form
Data file: Collection of related records stored on a disk. Also called a file. **13.5**
Data flow: Element of a data flow diagram represented by a line with an arrow that shows the input or output of data or information into or out from a process. **14.17**

Data flow diagram (DFD): Tool that graphically shows the flow of data in a system. The key elements of a DFD are the data flows, the processes, the data stores, and the sources. **14.17,** 14.28
Data integrity: The degree to which data is correct. **13.3**, 13.11, 13.13
Data maintenance, *see* File maintenance
Data mart: Smaller version of a data warehouse, which contains a database that helps a specific group or department make decisions. **13.39**
Data mining: Process of finding patterns and relationships among data. **13.39**
Data model: Rules and standards that define how a database organizes data. **13.21**
Data modeler, *see* Database analyst
Data processing: Describes the functions of a transaction processing system. **13.35**
Data projector: Output device that takes the image from a computer screen and projects it onto a larger screen so an audience of people can see the image clearly. **6.25**
Data redundancy: Storing the same data in more than one file. **13.11**, 13.13
Data store: Element of a data flow diagram shown as a rectangle with no sides that represents a holding place for data and information. **14.17**
Data type: Specifies the kind of data a field can contain and how the field is used. Common data types include text, numeric, currency, date, memo, hyperlink, and object. **3.16, 13.5**
Data warehouse: Huge database system that stores and manages historical and current transaction data. **7.28, 13.38**
Data warehousing specialist, 13.41
Database: Collection of data organized in a manner that allows access, retrieval, and use of that data. **3.15**, **13.2**-41
  certifications, 16.24
  design, 14.27
  file processing versus, 13.11-12
  hierarchy of data, 13.4-5
  multidimensional, 13.27
  object-oriented, 13.26
  object-relational, 13.21
  relational, 13.22-25, 13.33
  report writer, 15.19
  Web, 13.28-28
Database administrator: Person who manages and coordinates database activities by creating and maintaining the data dictionary, managing security of the database, monitoring database performance, and checking backup and recovery procedures. **13.30**
Database analyst (DA): Person who manages and coordinates database activities by focusing on the meaning and usage of data. Also called data modeler. **13.30**, 13.41, 16.9, 16.11
Database approach: System used to allow many programs and users to share data in a database. **13.12**
Database management system (DBMS): Software that allows you to create, access, and manage a database. 13.2, 13.12, **13.14**, 14.20
Database server: Server that stores and provides access to a database. **9.14**, **13.29**
Database software: Software used to create, access, and manage a database. Also called database management system (DBMS). 1.13, **3.16-17,** 13.12
Date: Field data type that contains month, day, and year information. **3.16**, **13.5**
Daughterboard: Small circuit board that plugs into the motherboard, often to add capabilities to the motherboard. **4.11**
Daughterboard upgrade: Processor upgrade in which the new processor chip is on a daughterboard. **4.11**
Dead code: Any code, or program instruction, that a program never executes; serves no purpose and should not exist. **15.8**
Dean, Mark, 7.25
Debug utility: Utility included in a programming language that allows identification of syntax and logic errors by examining program values while the program is running in slow motion. Also called a debugger. **15.14**
Debugger: Utility included in a programming language that allows identification of syntax and logic errors by examining program values while the program is running in slow motion. Also called a debug utility. **15.14**
Debugging: Process of locating and correcting syntax and logic errors in a program **15.14**
Decision support system (DSS): Management information system used to analyze data and make decisions. **13.37**
Decision table: A table that lists a variety of conditions and the actions that correspond to each condition; usually used when a process consists of many conditions or rules. **14.18**
Decision tree: A tool that shows the conditions and actions graphically; usually used when a process consists of many conditions or rules. **14.18**
Decoding: Control unit operation that translates program instructions into commands the computer can execute; part of the machine cycle. **4.5**
Decrypt: Process of deciphering encrypted data into a readable form. **12.16**
Dedicated line: Connection that always is established between two communications devices. **9.25**
Dedicated servers: Servers that perform a specific task. **9.14**
Default value: Value that a DBMS initially displays in a field. **13.15**
Defining diagram: Chart that identifies a program's inputs and outputs, and the processing steps required to transform the inputs into outputs. Also called an IPO chart. **15.4**
Defragmenting: Process of reorganizing a disk to the files are stored in contiguous sectors, which speeds up disk access and thus improves the performance of the entire computer. **8.30**
Deliverable: In managing projects, any tangible time such as a chart, diagram, report, or program file. **14.6**
Dell, Michael, 10.9
Delphi: Popular RAD tool with full object-oriented capabilities. **15.29**
Demodulate: To convert an analog signal into a digital signal. **9.28**
Density: Number of bits in an area on a storage medium. **7.7**
Design phase: Third phase in the SDLC that consists of two major activities: if necessary, acquire hardware and software, and develop all of the details of the new or modified information system to be implemented. 14.2, **14.21**-30, 15.3
Design tools: Tools used by programmers to develop a solution algorithm that include program flowcharts, Nassi-Schneiderman charts, and pseudocode. **15.9**
Desk check: Review a solution algorithm using test data to step through its logic. **15.12**
Desktop: Onscreen work area that can display graphical elements such as icons, buttons, windows, menus, links, and dialog boxes. **3.4**
  keyboards, 5.4, 5
  shortcuts, 8.23
  starting computer and, 8.6
  windows, 3.4-6
Desktop computer: Personal computer designed so the system unit, input devices, output devices, and any other devices fit entirely on or under a desk or table. **1.20**-22
  processors, 4.10
  purchasing, 8.48-53
Desktop publishing
  personal, 3.28-29
  professional, 3.23
Desktop publishing (DTP) software: Software used by professional designers to design and produce sophisticated documents that contain text, graphics, and brilliant colors. **3.23**
desktop publishing specialist, 16.9, 16.11
Detailed analysis: Occurs during the analysis phase of the SDLC, detailed analysis includes these activities: (1) study how the current system works; (2) determine the users' wants, needs, and requirements for the proposed system; and (3) recommend a solution. Sometimes called logical design. **14.15**
Detailed report: Management information system report that usually lists just transactions. **13.36**
Device dependent: Operating system that runs only on a specific type of computer. **8.17**
Device driver: Small program that tells the operating system how to communicate with a device; also called a driver. **8.11**-13
Device-independent: Operating systems that run on many manufacturers' computers. **8.17**
Diagnostic utility: Utility program that compiles technical information about a computer's hardware and certain system software programs and then prepares a report outlining any identified problems. **8.28**
Dialog box: Special window a program displays to provide information, present available options, or request a response. **3.6**
Dial-up access: Slow-speed connection to the Internet using a computer, modem, and regular telephone line to dial into an ISP or OSP. **2.6**
Dial-up line: Temporary connection that uses one or more analog telephone lines for communications. **9.25**
Dial-up modem, *see* Modem
Differential backup: Backup that copies only the files that have changed since the last full backup. **12.20**
Digital: Signals that have only two discrete states: on and off; describes computers because they are electronic devices powered by electricity, which also has only two states: on or off. **4.13,** 5.21
Digital Angel™: Chip that contains GPS, worn as a bracelet or chain or woven into fabric that has an antenna that communicates with a GPS satellite. The chip relays information if a person needs medical help, or can be used to locate a missing person or pet, track parolees, and protect valuables. **9.11**
Digital camera: Input device used to take pictures and store the photographed images digitally, instead of on traditional film. 1.5, 1.6, **5.18**-20, **11.12**
  handheld computer, 5.17
  photo printers and, 6.20
  Picture CD and, 7.22
  storage, 7.28
  SuperDisk™ drive, 7.10
  Web publishing and, 1.36, 2.26
Digital cash, *see* Electronic money
Digital certificate: Notice that guarantees a user or a Web site is legitimate, commonly used by e-commerce applications. Also called a public-key certificate. **12.23**
Digital Display Working Group (DDWG): Organization led by several industry companies that is developing a standard interface for all displays, called the Digital Video Interface (DVI). **6.10**
Digital divide: Phrase used to describe the idea that people of the world can be divided into two distinct groups: (1) those that have access to technology with the ability to use it and (2) those that do not have access to technology or are without the ability to use it. **1.30,** 11.9-11
Digital ID, *see* Digital signature
Digital light processing (DLP) projector: Projector that uses tiny mirrors to reflect light, which produces crisp, bright, colorful images that remain in focus and can be seen clearly even in a well-lit room. **6.25**
Digital modem: Modem that sends and receives data and information to and from a digital telephone line such as ISDN or DSL. **9.28**
Digital revolution, 1.2-4, 1.9
Digital signal: Signal that consists of individual electrical pulses that represent bits grouped together into bytes. **9.3**
digital signal processor (DSP) designer, 16.4

Digital signature: E-mail encryption code that a person, Web site, or company attaches to an electronic message to verify the identity of the message sender. **12.24**
Digital video (DV) camera: Video camera that records video as digital signals; also can capture still frames. **5.21**-24
Digital Video Interface (DVI): New digital interface, being developed by the Digital Display Working Group that provides connections for both CRT and LCD monitors. **6.10**
Digital watermark: Small digital image that when held in front of a PC camera, displays an associated Web page on the computer screen. **5.22**
Digitizer, *see* Graphics tablet
Digitizing tablet, *see* Graphics tablet
Direct access: Ability to locate a particular data item or file immediately, without having to move consecutively through items stored in front of the desired data item or file, used by floppy disks, hard disks, and compact discs. Also called random access. **7.26**
Direct conversion: A technique used to convert to the new system when the user stops using the old system and begins using the new system on a certain date. Also known as abrupt cutover. **14.31**
Direct Rambus® DRAM (Direct RDRAM®): Chips that are much faster than SDRAM chips because they use pipelining techniques. **4.18**
Director: Popular multimedia authoring program from Macromedia with powerful features that allow creation of highly interactive multimedia applications. **15.40**
Directory: Organized set of topics about Web sites. **2.15**
Disabled users, *see* Physically challenged users
Disaster recovery plan: Written plan describing the steps a company would take to restore computer operations in the event of a disaster, containing four components: the emergency plan, the backup plan, the recovery plan, and the test plan. **12.21**-22
Discrete speech: Process of speaking slowly and separating each word with a short pause, required by some voice recognition software. **5.15**
Discussion, *see* Newsgroup
Discussion board, *see* Message board
Disintermediation: Businesses that sell products directly to consumers without using traditional retail channels. **10.4,** 10.5
Disk cache: Portion of memory that a processor uses to store frequently accessed items, which speeds disk access time. When a program needs data, instructions, or information, the processor checks the disk cache. If the item is in disk cache, the processor uses that item and completes the process. If the processor does not find the requested item in the disk cache, then the processor must wait for the hard disk drive to locate and transfer the item from the disk to the processor. **7.12**
Disk cartridge, *see* Removable hard disk
Disk controller: Special-purpose chip and associated electronic circuits that control the transfer of data, instructions, and information from a disk to the rest of the computer. Sometimes referred to as an interface. **7.13**
Disk defragmenter: Utility program that reorganizes file and unused space on a hard disk to the operating system can access data more quickly and programs can run faster. **8.30**
Disk Defragmenter: Windows disk defragmenting utility. **8.30**
Disk scanner: Utility program that detects and corrects both physical and logical problems on a hard disk or floppy disk and searches for and removes unnecessary files. **8.29**
Diskette, *see* Floppy disk
Display, *see* Display device
Display device: Output device that visually conveys text, graphics, and video information; also called a display. Information on a display device, sometimes called soft copy, exists electronically and displays for a temporary period of time. **6.4**-12
Distance education (DE), *see* Distance learning (DL)
Distance learning (DL): Delivery of education at one location while the learning takes place at other locations; also called distance education (DE) or online learning. **3.35, 11.8,** 11.10, **15.39**
Distributed database: Database that exists in many separate locations throughout a network or the Internet. **13.39**
DNS server: Internet server that translates a domain name into its associated IP address, so that when a user types in a domain name, data is routed to the correct computer. **2.8**
Document object model (DOM): Feature of DHTML that defines every item on a Web page as an object. **15.36**
Documentation: Produced by the project team during the entire SDLC, the collection and summarization of data and information, including reports, diagrams, programs, or any other deliverable generated during the SDLC. The entire collection of documents for a single project is stored in a project notebook. **14.7**
Documents, collaboration on, 9.9
Domain name: Text version of an IP address. **2.8**, 10.24-25
Domain name system (DNS): System on the Internet that stores the domain names and their corresponding IP addresses. **2.8**
DOS (Disk Operating System): Several single user operating systems developed in the early 1980s for PCs; most widely used versions were PC-DOS and MS-DOS. **8.17**
Dot com: Name sometimes used to describe an organization that has a top-level domain of com. **2.8**
Dot-matrix printer: Impact printer that produces printed images when tiny wire pins on a print head mechanism strike an inked ribbon. When the ribbon presses against the paper, it creates dots that form characters and graphics. **6.14**
Dot pitch: The distance between each pixel on a display, used as a measure of image clarity; sometimes called pixel pitch. The smaller the distance between the pixels, the sharper the image. Text created with a smaller dot pitch is easier to read. **6.9**
Dots per inch (dpi): The number of pixels in an inch of screen display. **5.20**
Double data rate SDRAM (DDR SDRAM): Chips that are faster than SDRAM chips because they transfer data twice for each clock cycle, instead of just once; also called SDRAM II chips. **4.18**
Do-until control structure : Used in structured design, a control structure that tests the condition at the end of the loop and always will execute at least once. **15.8**
Do-while control structure: Used in structured design, a control structure that tests the condition at the beginning of the loop and repeats one or more times as long as a condition is true. **15.8**
Downlink: Transmission from a satellite to an earth-based station. **9.39**
Download (digital camera): Process of transfer a copy of pictures from a digital camera to a computer. **5.18**
Downloading (Web information): Process of receiving information, such as a Web page, onto a computer from a server on the Internet. **2.11**
  copyrighted material, 2.23
  electronic software distribution, 10.8-10
  music, 1.30, 7.23, 24
  viruses and, 3.4
Downward compatible (drives): Describes drives that can recognize and use earlier media. **7.7**
Downward-compatible (operating system): Operating system that recognizes and works with application software written for an earlier version of the operating system. **8.17**
Dr Watson: Windows utility program that diagnoses problems as well as suggests courses of action. **8.28**
DRAM, *see* Dynamic RAM
Drive bay, *see* Bay
Driver, *see* Device driver
DSL (digital subscriber line): High-speed connection to the Internet using a regular copper telephone line. **2.6, 9.26**
  cable modem vs., 9.29
DSL modem: Modem that sends and receives digital data and information between a computer and a DSL line. **9.28**
Dual inline memory module (DIMM): Type of memory module where the pins on opposite sides of the circuit board do not connect and thus form two sets of contacts; typically use SDRAM chips. **4.18**
Dual inline package (DIP): Chip package consisting of two parallel rows of downward pointing thin metal feet (pins). The pins attach a chip package to the circuit board. **4.4**
Dual-scan display, *see* Passive-matrix display
Dubinsky, Donna, 5.17
Dumb terminal: Terminal that has no processing power; it can enter and transmit data to, or receive and display data from, a computer to which it is connected. **6.27**
DVD player: Player reads DVD-ROMs. **7.25**
DVD-R (DVD-recordable): DVD that can be written on once and read (played) many times. **7.25**
DVD-RAM: Rewritable DVD that can be erased and recorded on multiple times. **7.25**
DVD-ROM (digital video disc-ROM): Extremely high capacity compact disc capable of storing from 4.7 GB to 17 GB. 1.8, **7.25**
  notebook computer, 8.54
DVD-ROM drive: Drive that reads DVD-ROMs; newer drives also can read audio CDs, CD-ROMs, CD-Rs, and CD-RWs. **7.25**
DVD-RW: Rewritable DVD that can be erased and recorded on multiple times. **7.25**
Dye-sublimation printer: Nonimpact thermal printer that uses heat to transfer colored dye to specially coated paper, creating images that are of photographic quality. Also called a thermal dye transfer printer. **6.19**
Dynamic HTML (**DHTML**): Newer type of HTML that allows inclusion of more graphical interest and interactivity in a Web page, without the Web page having to access the Web server. Web pages using DHTML update and change themselves on the client's (user's) computer, resulting in a faster display than Web pages created with basic HTML. **15.36**
Dynamic RAM (DRAM): Most common type of RAM, chips that must be re-energized constantly or they lose their contents; sometimes called main memory. **4.18**

eBay, 10.7
EBCDIC, *see* Extended Binary Coded Decimal Interchange Code
E-business, *see* E-commerce
E-cash, *see* Electronic money
E-commerce, *see* Electronic commerce
E-commerce server: Web host in an e-commerce environment, provides the hardware, software, and communications required for an e-retailer's Web server. Also called commerce server. **10.19**
E-commerce software: Software that allows a merchant to set up a storefront with a product database, combined with a shopping cart and should provide a secure environment to process order transactions. **10.18**
Economic feasibility: Measures whether the lifetime benefits of the proposed information system will be greater than its lifetime costs. Also called cost/benefit feasibility. **14.7**
Editing: Process of making changes to a document's existing content, including inserting, deleting, cutting, copying, and pasting items. **3.10**
Education: Process of developing knowledge through instruction. **11.6**-8
  career opportunities, 16.10
  computer career, 16.12-13
  continuing, 16.14
  home users, 11.3

  virtual reality and, 11.28
  See also Computer-based training; Distance learning
Educational software: Software that teaches a particular skill. 3.26, **3.30**
Edutainment: Form of computer-based training that is educational software that combines education with entertainment. **11.8**
Electricity, reducing use of, 11.33
EEPROM (electrically erasable programmable read-only memory): Type of PROM chip that a programmer can erase microcode from; used by flash memory. **4.20**
E-form, *see* Electronic form
Electromagnetic radiation (EMR): Magnetic field that travels at the speed of light, emitted in small amounts by CRT monitors. **6.11**
Electronic book (e-book): Small, book-sized computer that allows users to read, save, highlight, bookmark, and add notes to online text. New book content is downloaded to an e-book from the Web. **6.7**, 11.6, **11.22**
Electronic commerce (e-commerce): Financial business transaction that occurs over an electronic network such as the Internet. **1.31, 2.24-**25, **10.2-**25, **11.13-**14
  business models, 10.4-8
  cookies and, 12.29-30
  customer loyalty, 10.22-24
  digital certificates, 12.23
  entertainment media, 10.14-15
  e-retailing, 10.12-13
  finance, 10.14
  growth of, 10.4
  health, 10.16, 17
  online store, 10.17-25
  payments, 10.20-22
  revenue streams, 10.8-11
  travel, 10.15-16
Electronic Communications Privacy Act (ECPA): Federal law passed in 1986 that provides the same protection that covers mail and telephone communications to electronic communications such as voice mail. **12.32,** 12.33
Electronic Customer Relationship Management (eCRM): E-commerce strategy to combine personalized touch and customized service to customers, includes improving communications by using automatic e-mail to confirm orders, displaying a list of frequently asked questions (FAQs), and sending surveys for customer feedback. In addition, customer queries should be answered quickly and accurately and live chat rooms should be available for sales assistance. **10.23**
Electronic data interchange (EDI): Set of standards that control the transfer of business data and information among computers both within and among companies. **10.4**
Electronic form: Form that sends entered data across a network or the Internet. Also called an e-form. **13.18**
Electronic magazine: A publication available on the Web used as a research resource by systems analysts when identifying technical specifications for the new or modified system; the information can be located quickly and easily. Also called e-zine. **14.22**
Electronic money (e-money): Means of paying for goods and services over the Internet. When digital cash is purchased, money is withdrawn from a user's bank account, then the bank issues unique digital cash numbers that represent the amount of money withdrawn. One implementation places the digital cash on a smart card, which can be swiped on a reader on a user's computer. Also called digital cash. **7.29, 10.22**
Electronic profiles, 12.27-28
Electronic signature: Signature made using a graphics tablet and pen; also called an e-signature. **5.13**
Electronic software distribution (ESD): Distribution method used by online businesses that sell digital products such as software, music, movies, books, and photographs; a purchase entitles a user to download one copy of an item. **10.8**
Electronic storefront: Method by which a customer (consumer) visits an online business; contains product descriptions, graphics, and a shopping cart. Also called an online catalog. **2.25, 10.12,** 10.18-20, **11.14**
E-mail (electronic mail): Transmission of messages and files via a computer network such as a local area network or the Internet. **2.30, 3.32, 9.5**
  attachments, 3.4, 7.16
  home users, 11.4
  Internet hard drive, 7.16
  privacy, 12.33
  security and, 12.24
  spam, 12.31
  viruses and, 3.4, 12.2, 12.7
  voice, 2.31
  Web-enabled device, 6.7
E-mail address: Combination of a user name and a domain name that identifies a user, so he or she can receive Internet e-mail. **2.31**
E-mail filtering: Service that blocks e-mail messages from designated sources. **12.31**
E-mail program, *see* E-mail software
E-mail publishing: Process of staying in touch with customers by sending newsletters via e-mail messages to a large group of people with similar interests. **10.24**
E-mail software: Software used to create, send, receive, forward, store, print, and delete e-mail messages. **2.30, 3.32**
  operating systems and, 8.13
Embedded operating system: Operating system on most handheld computers and small devices. **8.25**
Emergency disk, *see* Emergency repair disk
Emergency plan: Part of a disaster recovery plan, the steps to be taken immediately after a disaster strikes. **12.21**
Emergency repair disk: Removable disk that contains an uninfected copy of key operating system commands and startup information that enables the computer to restart correctly, used to detect and remove boot sector viruses. Also called boot disk, emergency disk, or rescue disk. 3.4, **8.6,** 8.61, **12.6**
E-money, *see* Electronic money
Emoticons: Symbols used to express emotion when communicating on the Internet. **2.37**
Employee monitoring: Use of computers to observe, record, and review an individual's use of a computer. **12.33**
Employee productivity, 14.31
Empower: Process of giving users the ability to write simple programs and satisfy information processing requirements on their own. **15.27**
Empowering: Process of giving users access to information necessary to make decisions that previously were made by managers. **13.33**
Encapsulation: The concept of packaging methods and attributes into a single object; encapsulating, or hiding, the details of the object from the programmer. Also called information hiding. **15.20**
Encryption: Process of converting readable data into unreadable characters to prevent unauthorized access. **12.16-**17
Encryption key: Formula used by a data recipient to decrypt ciphertext. **12.16**
End-user license agreement (**EULA**): Gives users the right to use software under certain terms and conditions. **12.14, 14.26**
ENERGY STAR program: Program developed by the United States Department of Energy and the United States Environmental Protection Agency that encourages manufacturers to create energy-efficient devices that require little power when they are not in use. Monitors and devices that meet ENERGY STAR guidelines display an ENERGY STAR® label. **6.12, 11.33**
E-news, 8.32-33
Engelbart, Douglas, 5.8
Enhanced Integrated Drive Electronics (EIDE): One of the more widely used controllers for hard disks, can support up to four hard disks at 137 GB per disk. **7.13**
Enhanced keyboard: Keyboard that has 12 function keys along the top, 2 CTRL keys, 2 ALT keys, and a set of arrow and additional keys between the typing area and the numeric keypad. **5.5**
Enhanced resolution: Measure of photographed resolution, used by some manufacturers instead of or in addition to optical resolution. Enhanced resolution usually is higher because it uses a special formula to add pixels between those generated by the optical resolution. Also called interpolated resolution. **5.20**
Enterprise ASP, 3.36
Enterprise storage system: Strategy that focuses on the availability, protection, organization, and backup of storage in a company. The goal of enterprise storage is to consolidate storage so operations run as efficiently as possible. **7.27**
Entertainment, 11.11-12
  DVD, 7.24, 25
  e-commerce, 10.14, 15
  education with, 11.8
  home users, 1.30, 11.3
  Internet and, 1.17
Entertainment software: Software for personal computers that includes interactive games, videos, and other programs designed to support a hobby or provide amusement and enjoyment. **3.31**
Entity: An object in the system that has data. **14.16**
Entity-relationship diagram (**E-R diagram**, or **ERD**): Tool used that graphically shows the connections between entities in a system. **14.16**
Entry point: Location where a program, module, or control structure begins. **15.8**
E-procurement, *see* Vendor B2B
Erasable CD (CD-E), *see* CD-RW
E-retail: Describes retailers who use the Web to sell their products and services; also called e-tail. **10.12,** 10.17-25
Ergonomic keyboard: Keyboard with a design that reduces the chance of wrist injuries. **5.6**
Ergonomics: Design and modifications that can be made to incorporate comfort, efficiency, and safety into items in the workplace. **5.6,** 6.5, 6.11, 8.57, **11.32**
E-signature, *see* Electronic signature
E-sports, 8.32-33
E-stamp: Digital postage that can be bought and printed from a personal computer. Also called Internet postage. **6.21**
E-tail, *see* E-retail
Ethernet: LAN technology that allows personal computers to contend for access to a network; based on a bus topology but can be wired in a star pattern. **9.18-**19, 9.22
Ethics, 11.34-37
Event: Message in object-oriented programming. **15.21**
E-weather, 8.32-33
Exception criteria: Conditions outside of a normal activity or status range. **13.37**
Exception report: Management information system report that identifies data outside of a normal condition. **13.37**
Executes: Process of computer carrying out program instructions by first placing, or loading, the instructions in the memory of the computer. **1.10**
Executing: Control unit operation that carries out commands; part of the machine cycle. **4.5**
Execution time (e-time): The time it takes the control unit to execute and store. **4.6**
Executive information system (EIS): Management information system that supports the strategic information needs of executive management. **13.38**
Executive management: People in the highest management positions in a company, who focus on the long-range direction of the company. Also called senior management or top management. **13.32**

Exit point: Location where a program, module, or control structure ends. **15.8**
Expansion board: Circuit board that fits in an expansion slot. **4.23**
Expansion bus: Bus that allows the processor to communicate with peripheral devices. **4.30**-32
Expansion card: Circuit board that fits in an expansion slot; examples are a video card, sound card, network interface card, or modem card. 4.4, **4.23**-25
Expansion slot: Opening, or socket in the motherboard, into which a circuit board can be inserted, such as additional memory, higher-quality sound devices, a modem, or graphics capabilities. **4.23**
Expert system: Management information system that captures and stores the knowledge of human experts and then imitates human reasoning and decision making. **13.40**
Exposed drive bay, *see* External drive bay
Extended Binary Coded Decimal Interchange Code (EBCDIC): Coding system used primarily on mainframe computers. **4.14**
External cache, *see* Level 2 (L2) cache
External drive bay: Drive bay that allows access to the drive from outside the system unit; also called exposed drive bay. **4.32**
External modem: Modem that is a stand-alone (separate) device that attaches to a special serial port on a computer with a standard telephone cord connected to a telephone outlet. **9.28**
External sources: Sources of data from outside a company. **13.37**
Extranet: Network that allows customers or suppliers to access part of a company's extranet. **9.20**
Eyes
  computer vision syndrome and, 11.31
  iris recognition system, 12.12
E-zine: A publication available on the Web used as a research resource by systems analysts when identifying technical specifications for the new or modified system; the information can be located quickly and easily. Also called electronic magazine. **14.22**

Face recognition system: Biometric device that captures a live face image and compares it to a stored image to authenticate a user. **12.11**
Facsimile (fax) machine: Device that transmits and receives documents over telephone lines. Stand-alone fax machines scan an original document, convert the image into digitized data, and transmit the digitized image to a receiving fax, while fax modems send and receive electronic documents from a computer as faxes. **6.25**-26
Fair Credit Reporting Act: Federal law passed in 1970 that limits the rights of others viewing a credit report to those with a legitimate business need. The law has a loophole in that it does not define a legitimate need, resulting in just about anyone being able to say they have a legitimate need and gain access to a credit report. **12.33**
Fanning, Shawn, 1.30
FAQs (Frequently Asked Questions): Page that assists a user in finding answers to common questions. **3.36**
FAQs: Stands for frequently asked questions. **2.37**
Fast Ethernet: Ethernet standard that transmits data and information at speeds up to 10 times faster than the original standard. **9.19**
Fault-tolerant computer: Computer that continues to operate even if one of its components fails. **8.9**
Fax: Document that can contain handwritten or typed text, illustrations, photographs, or other graphics. **9.5**
Fax machine, *see* Facsimile (fax) machine
Fax modem: Modem used to send (and sometimes receive) electronic documents as faxes. **6.26**
Feasibility: Measure of how suitable the development of a system will be to the company. Feasibility is tested using these criteria: operational feasibility, schedule feasibility, technical feasibility, and economic feasibility. **14.6**
Feasibility assessment, 14.6-7
Feasibility report, 14.14
Feasibility study: Occurs during the analysis phase of the SDLC, an investigation by the systems analyst to decide whether the problem or improvement identified in a project request is worth pursuing. Also called preliminary investigation. **14.13**
Female connector: Connector that has matching holes to accept the pins on a male connector, similar to an electrical wall outlet. **4.26**
Fetching: Control unit operation that obtains a program instruction or data item from memory; part of the machine cycle. **4.5**
Fiber-optic cable: Transmission medium whose core consists of dozens or hundreds of thin strands of glass or plastic that use light to transmit signals. **9.34**
Field: Column in a table that contains a specific piece of information within a record. **3.16, 13.4**
Field camera: Portable digital camera that has many lenses and other attachments, often used by photojournalists. **5.19**
Field name: Unique identifier for a field. **13.4**
Field size: The maximum number of characters that a particular field can contain. **3.16, 13.5**
Fifth-generation language (**5GL**): Programming language that provides a visual or graphical interface for creating the source code; often converting the source code to machine language using a 3GL or 4GL compiler. **15.20**
File: Named collection of data, instructions, or information. **3.10**
  backup, *see* Backup
  graphics, 2.18
  network management, 9.12
  security and, 12.26
File (database), *see* Data file
File allocation table (FAT): Table of information that the operating system uses to locate files on a disk. **8.15**
File compression utility: Utility program that shrinks the size of a file. **8.28**
File maintenance: Procedures that keep data current. Also called data maintenance. **13.6**-10
File manager: Operating system program that performs functions related to storage and file management. **8.14**
File name: Unique combination of letters of the alphabet, numbers, and other characters that identifies a file. **3.10**
File processing environment, 13.13
File processing system: System used to store and manage data that involves each department or area within an organization having its own set of files, often creating data redundancy and data isolation. **13.11**
File server: Server that stores and manages files. **9.14**
File viewer: Utility program used to display and copy the contents of a file. **8.27**
File virus: Virus that attaches itself to program files. When the infected program is run, the virus loads into memory. Sometimes called a program virus. 12.2, **12.4**
Filo, David, 2.17
Finance, 11.14-16
Financial institutions, e-commerce and, 10.14
Financial management, for home users, 11.3
Find or search: Feature that locates all occurrences of a certain character, word, or phrase. **3.9**
  network agent, 11.29
  shopping online and, 10.15
Fingerprint scanner: Biometric device that captures curves and indentations of a fingerprint. **12.11**
FIR (fast infrared): High-speed IrDA port. **4.29**
Firewall: Security system consisting of hardware and/or software that prevents unauthorized access to data and information on a network. **9.20,** 9.29, **12.24**
  network, 12.25
  personal, 12.5, 12.23, 12.25
FireWire, *see* 1394 port
Firmware: ROM chips that contain permanently written data, instructions, or information, recorded on the chips when they are manufactured. **4.20**
Fixed disk: Hard disk inside the system unit of a desktop personal computer. **7.10**
Flame wars: Exchanges of flames. **2.37**
Flames: Abusive or insulting messages sent over the Internet. **2.37**
Flash BIOS: Type of BIOS that allows a computer easily to update the contents of the BIOS chip, if necessary. **4.21**
Flash memory cards: Removable device used in handheld computers and devices that stores flash memory, allowing the convenient transfer of data from those devices to a desktop computer. **4.21,** 4.25
Flash memory: Type of nonvolatile memory that can be erased electronically and reprogrammed; also known as flash ROM or flash RAM. 4.10, **4.21**
Flash RAM, *see* Flash memory
Flash ROM, *see* Flash memory
Flatbed scanner: Scanner that works similar to a copy machine except it creates a file of a document in memory instead of a paper copy. **5.25**
Flat-panel display: Display used by devices such as LCD monitors and LCD displays, using a lightweight, compact screen that consumes less than one-third of the power of a CRT monitor, making it ideal for mobile users or users with space limitations. **6.5**
Flip chip-PGA (FC-PGA) package: Higher-performance PGA chip package that places the chip on the opposite side (flip side) of the pins. **4.4**
Floating-point coprocessor: Coprocessor used to speed up engineering, scientific, or graphics applications; sometimes called a math or numeric coprocessor. **4.13**
Floppy disk: Portable, inexpensive storage medium that consists of a thin, circular, flexible plastic disk with a magnetic coating enclosed in a square-shaped plastic shell. Also called diskette. 1.7, 7.4, **7.6**-9
  capacity of, 7.5, 7, 8
  formatting, 8.15
  viruses and, 3.4, 12.5
Floppy disk drive (FDD): Device that can read from and write on a floppy disk. 1.7, **7.6**
Flowchart: Design tool that graphically shows the logic in a solution algorithm, using symbols that represent various operations in a program's logic. Also called program flowchart. **15.9**
Flowcharting software: Software used to develop flowcharts that makes them easy to modify and update. **15.10**
Font: Name assigned to a specific design of characters. **3.10**
Font size: The size of the characters in a particular font, gauged by a measurement system called points. **3.10**
Font style: Emphasis added to a font, such as **bold**, *italic*, and underline. **3.10**
Footer: Text that appears at the bottom of each page. **3.9**
Foreground: When running multiple applications, describes the active application. **8.9**
Form: Window on a screen that provides areas for entering or changing data in a database. Sometimes called a data entry form. **13.17**
Formalizing solution, 15.15
Format: Process of changing a document's appearance. **3.10**
Formatting: Process of preparing a disk for reading and writing, usually performed in advance by floppy and hard disk manufacturers. **7.8, 8.15**
Formula: Group of symbols that performs calculations on data in a worksheet and displays the resulting value in a cell. **3.12**
Fortezza: Public key encryption technology that stores a user's private key and other information on a PC Card. **12.17**

Forward recovery, *see* Rollforward
Fourth-generation language (4GL): Programming language that uses English-like statements and is a nonprocedural language, meaning the programmer only specifies what the program should accomplish without explaining how. **15.19**
Fragmented: Describes file that has contents scattered across two or more noncontiguous sectors, slowing down disk access and thus the performance of the entire computer. **8.30**
Freeware: Copyrighted software provided at no cost to a user by an individual or company; it cannot be resold by a user. **1.14**
Front end: Program that typically has a more user-friendly interface than a DBMS. **13.12**
FTP (File Transfer Protocol): Internet standard used to upload and download files with other computers on the Internet. **2.32, 9.24**
FTP server: Computer used to upload and download files using FTP. **2.33, 9.24**
FTP site: Collection of files including text, graphics, audio, video, and program files that reside on an FTP server. **2.33**
Fulfillment companies: Companies that provide services for e-retailers, including warehousing and inventory management, product assembly, order processing, packing, shipping, return processing, and online reporting. Also called logistics companies. **10.22**
Full backup: Backup that copies all of the files in a computer. Also called an archival backup. **12.20**
Full-update privileges: Database access privileges that allow a user to retrieve and make changes to data. **13.19**
Function keys: Special keys on a keyboard marked F1, F2, and so on, that are programmed to issue commands to a computer. **5.4**
Function: Predefined formula that performs common calculations such as adding the values in a group of cells or generating a value such as the time or date. **3.13**

Gantt chart: Bar chart that uses horizontal bars that shows project phases or activities, used to plan and schedule the time relationships among project activities. **14.5**
Garbage in, garbage out (GIGO): Computing phrase that points out that the accuracy of a computer's output depends on the accuracy of the input. **1.9**, **13.3**
Gas plasma monitor: Flat-panel display that uses gas plasma technology, which has a layer of gas contained between two sheets of material. When voltage is applied, the gas releases ultraviolet (UV) light. This UV light causes the pixels on the screen to glow and form an image. **6.8**
Gates, Bill, 1.9, 1.21, 3.5, 3.7
GB, *see* Gigabyte
Gender changer: Device that enables two connectors to be joined that are either both female and both male. **4.26**
Gerhauser, Heinz, 10.15
Gesture recognition: Process that allows a computer to detect human motions, such as recognizing sign language, reading lips, tracking facial movements, or following eye gazes; still in the prototype stage. **5.32**
Ghosting: Etching of images permanently on a monitor's screen. **8.31**
GIF (Graphics Interchange Format): File format for graphical images that uses compression techniques to reduce a file's size, which results in faster downloading of Web pages. GIF works best for images with only a few distinct colors. **2.19**
Gigabit Ethernet: Ethernet standard that provides transmission speeds up to 10 times faster than Fast Ethernet. **9.19**
Gigabits per second (Gbps): Measure of data transfer rate; the number of gigabits a line can transfer in one second. **9.26**
Gigabyte (GB): Approximately one billion bytes. **4.16**
Gigahertz (GHz): One billion ticks of the system clock. **4.8**
Global comments: Comments that explain a programs purpose and identify the program name, its author, and the date written; generally included at the top of a program. **15.13**
Global positioning system (GPS): One or more earth-based receivers that accept and analyze signals sent by satellites in order to determine the receiver's geographic location. **9.10, 11.24**
Gnutella, 9.16
Goldberg, Murray, 11.9
Government, computer uses in, 11.16-18
GPS, *see* Global positioning system
Grandparent: Oldest copy of a file. **12.21**
Graphic: Digital representation of nontext information such as a drawing, chart, or photograph; also called a graphical image. **2.18**-19, 3.22-24, **6.3**
  accuracy of, 11.35
  creating, 3.18
  desktop publishing, 3.29
  printing and, 6.18
  word processing software, 3.8
Graphic designer/illustrator, 16.9
Graphical image, *see* Graphic
Graphical user interface: User interface, which controls how a user enters data and instructions and how information displays on the screen; uses visual images such as icons, buttons and other graphical objects. **1.12, 3.4**-7, **5.3, 8.8**
  designing, 15.22
Graphics card, *see* Video card
Graphics designer/illustrator, 6.31
Graphics Interchange Format, *see* GIF
Graphics tablet: Flat, rectangular, electronic plastic board, used with an electronic pen to create drawings and sketches. Also called a digitizer, or digitizing tablet. **5.13**
Gray scaling: Monochrome displays that use many shades of gray from white to black, which provides better contrast for the images. **6.4**
Green computing: Process of reducing electricity and environmental waste while using a computer. **11.33**
Groupware: Software application that helps groups of people work together and share information over a network, most often using personal information manager functions. A major feature of groupware is group scheduling, in which a group calendar tracks the schedules of multiple users and helps coordinate appointments and meeting times. Groupware is a component of a broad concept called workgroup computing. **3.33, 9.10**
Groupware database: Database that stores documents such as schedules, calendars, manuals, memos, and reports. **13.26**
Grove, Andy, 4.13

Hacker: Person who tries to access a computer or network illegally. **12.7,** 12.23
Hand geometry system: Biometric device that measures the shape and size of a hand. **12.11**
Handheld computer: Small computer that fits in a user's hand; also called a palmtop computer. Some have small keyboards and others have no keyboard at all and they usually do not have disk drives. Instead, programs and data are stored on chips inside the system unit or on miniature storage media. **1.23,** 5.14
  drawbacks, 1.25
  e-commerce and, 10.3
  input devices, 5.6, 5.16-17
  keyboard, 5.6
  operating system, 8.3, 25-27
  purchasing, 8.55-57
  storage, 7.28
  system unit, 4.33
Handwriting recognition software: Software that translates handwritten letters and symbols into characters that the computer understands. **5.14**
Hard copy: Printed information that exists physically and is a more permanent form of output than that presented on a display device (soft copy). Also called printout. **6.12**
Hard disk: Storage medium that consists of several inflexible, circular platters that store items electronically. The platter is made of aluminum, glass, or ceramic and is coated with a material that allows items to be recorded magnetically on its surface. The platters, along with the read/write heads, and the mechanism for moving the heads across the surface of the hard disk, are enclosed in an airtight, sealed case to protect them from contamination. Hard disks can be fixed or removable. Also called a hard disk drive. 1.7, 7.4, **7.10**
  capacity of, 7.5
  controllers, 7.13
  formatting, 8.15
  how it works, 7.11-12
  Internet, 7.16, 7.17, 7.22
  RAID, 7.14
  reformatting, 12.6
  removable, 7.13
Hard disk controller (HDC): Special-purpose chip and associated electronic circuits that are the interface for a hard disk on a personal computer; may be part of a disk drive or a separate card inside the system unit. **7.13**
Hard disk drive, *see* Hard disk
Hardware: Electric, electronic, and mechanical equipment that makes up a computer. **1.4,** 1.5-8
  careers, 16.4
  certifications, 16.20
  green computing, 11.33
  input, 5.1-33
  maintenance, 8.60-61
  networked, 9.11
  operating system and, 3.3
  output, 6.1-31
  purchasing, 8.48-50
  registration, 8.59
  repairs, 16.11
  SDLC, 14.21-26
  starting computer and, 8.5-6
  storage, 7.1-31
  system software and, 1.12
  system unit, 4.1-35
  warranties, 14.23
  Web site, 2.26
Hardware theft: Act of stealing computer equipment. **12.13**
Hardware vandalism: Act of defacing or destroying computer equipment, **12.13**
Hash: Mathematical formula that generates a code from the contents of an electronic message, using a public key method. **12.24**
Head crash: Event that occurs to a hard disk when a read/write head touches the surface of a platter, usually resulting in a loss of data or sometimes loss of the entire drive. **7.12**
Header: Text that appears at the top of each page. **3.9**
Head-mounted pointer: Device used to control a pointer or insertion point. The switch that controls the pointer might be a pad pressed by hand, a foot pedal, a receptor that detects facial motions, or a pneumatic instrument controlled by puffs of air. Head-mounted pointers are used by people with limited hand movement. **5.32**
Headset: Audio output device plugged into a port on the sound card and worn on a user's head, that allows sound to be heard only by the user. **6.23**
Health issues, 8.58, 11.30-33
  handheld devices, 1.25
  keyboard, 5.6
  monitor, 6.5, 6.11
  See also Ergonomics
Health care, computers used in, 11.19-21, 11.22
Health-related Web sites, 10.16, 17
Heat pipe: Device that cools processors in notebook computers. **4.12**
Heat sink: Small ceramic or metal component with fins on its surface that absorbs and ventilates heat produced by electrical components; used to cool processors. **4.12**

Help Desk Specialist, 1.37, 16.9
Hertz: Measure of a screen's refresh rate, hertz is the number of times per second the screen is redrawn. **6.9**
Hertz: One cycle per second. **4.8**
Hewlett, Bill, 6.18
Hewlett-Packard, 6.18
Hidden drive bay, *see* Internal drive bay
Hierarchy chart: Chart used by programmers to represent program modules graphically. Also called structure chart, or top-down chart. **15.6**
HiFD™ (High-Capacity Floppy Disk) drive: High-capacity disk drive developed by Sony that reads from and writes on a 200 MB HiFD™ disk. 7.9, **7.10**
High-capacity disk drive: Disk drive that uses disks with capacities of 100 MB and greater. **7.9-**10
High-definition television (HDTV): Type of television set that works with digital broadcasting signals and supports a wider screen and higher resolution display than a standard television set. **6.12**
High-level language: A machine-dependent programming language that runs on many different types of computers and operating systems; includes third-generation, fourth-generation, and fifth-generation languages. **15.16**
High-performance addressing (HPA): Technology used in the latest passive-matrix displays, which provides image quality near that of TFT displays. **6.8**
Hit: Any Web page name that lists as the result of a search. **2.14**, 10.24
Home design/ landscaping software: Software used by homeowners or potential homeowners to assist with the design or remodeling of a home, deck, or landscape. **3.30**
Home inventory list, 13.5
Home network: Network that can connect multiple computers in a home or home office. **9.22**, 12.25
Home page: Starting Web page for a browser; provides information about a site's purpose and content. Some Web sites also refer to their starting page as a home page. **2.10-**11
Home user: User that spends time on a computer at home for purposes of research and education, budgeting and personal financial management, home business management, entertainment, personal and business communications, and Web access. 1.2, 1.21, **1.29**, 11.3-5
  networked hardware and, 9.11
  software and, 3.26
  storage and, 7.31
  telecommuting from, 11.26
HomePLC (powerline cable) network: Network that uses the same lines that bring electricity and power into a home, needing no additional wiring. Data transmits through the existing power lines in the house. Also called powerline LAN. **9.22**
HomeRF (radio frequency) network: Home network that uses radio waves, instead of cables, to transmit data. **9.22**
Horizontal market software: Software that meets the needs of many different types of companies. **14.20**
Host, *see* Node
Host computer: Computer that dumb terminal connects to; performs the processing and sends the output back to the dumb terminal. **6.27**
Host computer (Internet): Internet server that contains files and services. **2.6**
Host computer (server), *see* Server
Hot plugging: Feature of PC Card that allows it to be changed without having to open the system unit or restart the computer; also called hot swapping. **4.25**
Hot swapping, *see* Hot plugging
HTML (hypertext markup language): Set of special codes, called tags that format a file for use as a Web page. **2.29**
HTML dynamic, 15.36
HTML editor: Web page authoring software that allows the creation of sophisticated Web pages that include graphical images, video, audio, animation, and other special effects. Sometimes called Web page authoring software. **15.38**
http (hypertext transfer protocol): Communications standard that enables pages to transfer on the Web. **2.13**
Https://, 10.21, 12.23
Hub (connecting networks): Device that provides a central point for cables in a network. **9.30**
Hub (star network): Central computer that provides a common connection point for devices in a star network. **9.18**
Hyperlink: Web address that links to a document or a Web page. **2.11, 3.16**
  data type, 13.5
Hypermedia database: Database that contains text, graphics, video, and sound. **13.26**
Hypertext database: Database that contains text links to other documents. **13.26**
Hypertext markup language (**HTML**): Special formatting language used to create Web pages. **15.31**
Hypertext transfer protocol, *see* http

IBM, 1.26
IBM Certified Developer Associate, 16.20
IBM Certified Professional Server Specialists PSS, 16.20
IBM Certified Solutions Expert DB2 UDB V6.1, 16.24
IBM Certified Specialist, 16.18, 16.20
IBM Database Administration for UNIX, Windows, and OS/2, 16.24
I-CASE, 14.29
IC designer, 16.4
Icon: Small image that displays on the screen to represent a program, document, or some other object. **1.12, 3.4, 8.8**
Identification: Verification of a valid user. **12.8-**13
I-drive, 7.16
IEEE 1284: Institute of Electrical and Electronics Engineers standard that specifies how older and newer peripheral devices that use a parallel port should transfer data to and from a computer. **4.28**
IEEE 1394, 4.28, 29
If-then-else control structure: Used in structured design, a selection control structure that evaluates conditions to determine if they are true or false. If the result of the condition is true, one action is performed; if false, a different (or possibly no) action is performed. **15.7**
Illustration software, *see* Paint software
Image editing software: Software that has the capabilities of paint software as well as the capability to modify existing images. **3.24**
Image maps: Graphical images that point to a URL; used in place of, or in addition to, plain text hyperlinks. **15.32**
Image processing: Process of capturing, storing, analyzing, displaying, printing, and manipulating images; also called imaging. Image processing allows the conversion of paper documents such as reports, memos, and procedure manuals into an electronic form. Once saved electronically, the documents can be distributed electronically. **5.26**
Image processing system: System used to store and index documents, similar to an electronic filing cabinet that provides access to exact reproductions of original documents. **5.26**
Imaging, *see* Image processing
Imaging Preview: Windows Explorer utility that displays the contents of graphics files. **8.27**
Impact printer: Printer that forms characters and graphics on a piece of paper by striking a mechanism against an ink ribbon that physically contacts the paper; they generally are noisy because of this striking activity and typically do not provide letter quality print. **6.14-**15
Implementation phase: Fourth phase in the SDLC consisting of constructing, or building, the new or modified system and then delivering it to the users. Four major activities in the implementation phase are: if necessary, develop programs; install and test the new system; train users; and convert to the new system. 14.2, **14.30**-32, 15.3
Implemented: Programs that are placed into production, allowing users to interact with the programs to process real, or live, transactions. **15.15**
Import: Process of bringing clip art or other objects into an application. **3.18**
Incremental backup: Backup that copies only the files that have changed since the last full or incremental backup. **12.20**
Inference rules: Components of expert system that are a set of logical judgments that are applied to the knowledge base each time a user describes a situation to the expert system. **13.40**
Infinite loop: Set of instructions that repeats continuously, or forever; properly designed programs should not contain infinite loops. **15.8**
Infomediary: B2B site that provides specialized information about suppliers and other businesses. **10.5**
Information: Data that is organized, meaningful, and useful to a particular user or group of users. **1.4,** 1.27, **5.3, 13.2**
  accuracy, 11.34-36
  electronic data interchange, 10.4
  gathering, SDLC, 14.7-8
  sharing using networks, 9.11
  valuable, 13.30-33
Information appliance, *see* Internet appliance
Information hiding: The concept of packaging methods and attributes into a single object; hiding, or encapsulating, the details of the object from the programmer. Also called encapsulation. **15.20**
Information privacy: The right of individuals and companies to deny or restrict the collection and use of information about them. **12.26-**35
Information processing cycle: The series of input, process, output, and storage activities. **1.5,** 1.9
Information system (IS): System of hardware, software, data, people, and procedures that allows a person to obtain useful and timely information from a computer. **1.27, 13.34-**41, **14.2**
  conversion, 14.31-32
  development, 14.1-33
  types of, 13.34-41
Information theft: Theft that occurs when someone steals personal or confidential information. **12.15-**17
Informational Web page: Web page that contains factual information. **2.17**
Informix Certified Database Specialist, 16.24
Infrared (IR): Wireless transmission media that sends signals using infrared light waves. **9.39**
Inheritance: Concept of lower levels of classes inheriting methods and attributes of higher levels of classes. **15.20**
Ink-jet printer: Nonimpact printer that forms characters and graphics by spraying tiny drops of liquid ink onto a piece of paper. **6.15-**16
Inoculate: Technique used by antivirus programs that records information about a program file such as the file size and file create date in a separate inoculation file. **12.6**
Input: Any data or instructions entered into the memory of a computer; once in memory, input can be accessed by the processor and processed into output. **1.5, 5.2-**33
  design, 14.27
  digital cameras, 5.18-20
  handheld computers, 1.23, 5.16-17
  keyboard, 5.4-6
  mouse, 5.7-9
  physically challenged users, 5.31-32
  pointing devices, 5.7-14
  purchasing computer and, 8.49
  storage devices as, 7.4
  video, 5.21-24
  voice, 5.14-16, 6.24
Input device: Any hardware component that allows a user to enter data, programs, commands, and user responses into a computer. Popular input devices include the keyboard, mouse, stylus, microphone, digital camera, scanner, and PC camera. **1.5, 5.4**

Insertion point: Symbol that indicates where on the screen the next character that is typed will display. Depending on the program, the symbol may be a vertical bar, a rectangle, or an underline. **5.4**
Install: Process of loading software on a computer's hard disk in order to use a program. **1.11**
Installing a personal computer, 8.57-59
Instant messaging (IM): Real-time Internet communications service that notifies users when one or more people are online and then allows them to exchange messages or files or join a private chat room with each other. Many instant messaging services also can alert a user to information such as calendar appointments, stock quotes, weather, or sports scores. **2.36, 3.33, 9.6**
Instant messenger: Software from an instant messaging service. **2.36, 3.33**
Instruction cycle, *see* Machine cycle
Instruction time (I-time): The time it takes the control unit to fetch and decode. **4.6**
Instructions: Programs, commands, and user responses. **5.3**
Integrated circuit (IC): Microscopic pathway capable of carrying electrical current; can contain millions of elements such as transistors. **4.4**
Integrated CPU: New type of processor that combines the functions of a processor, memory, and a video card on a single chip; sometimes used by lower-costing PCs and Internet appliances. **4.11**
Integrated software: Software that combines applications such as word processing, spreadsheet, and database into a single, easy-to-use package. The applications within the integrated software package use a similar interface and share some common features. **3.27**
Integration test: A test that verifies an application works with other applications. One of three different tests that system developers perform during the implementation phase. **14.30**
Intel, 4.10, 4.11, 4.13, 4.15
Intel-compatible processors: Processors made by companies such as AMD that have the same internal design or architecture as Intel processors and perform the same functions, but often are less expensive; used in PCs. **4.10**
Intellectual property (IP): Work created by inventors, authors, and artists. **11.36**
Intellectual property rights: Rights to which creators are entitled for their inventions, writings, and works of art. **11.36**
Intelligent agent: Any software program that independently asks questions, pays attention to work patterns, and carries out tasks on behalf of a user. **11.29**
Intelligent home network: Network that, in addition to data transmission, includes features such as lighting control, thermostat adjustment, and a security system. **9.23**
Intelligent smart card: Smart card that contains a processor and has input, process, output, and storage capabilities. **7.29**
Intelligent terminal: Terminal that has a monitor, keyboard, memory, and a processor that has the capability of performing some functions independent of the host computer; sometimes called programmable terminals because they can be programmed to perform basic tasks. **6.28**
IntelliSense™ technology, 11.29
Interactive TV: Two-way communications technology in which users interact with television programming. **6.12**
Interface card: Circuit board that fits in an expansion slot. **4.23**
Internal cache, *see* Level 1 (L1) cache
Internal comments: Comments that explain the purpose of the code statements within the program; appear throughout the body of the program. **15.13**
Internal drive bay: Drive bay concealed entirely within the system unit; also called hidden drive bay. **4.32**
Internal modem, *see* Modem card
Internal sources: Sources of data from a company's database. **13.37**
International Computer Security Association (ICSA): Association that helps companies and individuals with computer security plans. **12.22**
Internet: The world's largest network, a worldwide collection of networks that links together millions of businesses, government agencies, educational institutions, and individuals. Also called the Net. 1.10, **1.17, 2.2**-37
  accessing, 1.17
  accurate information, 11.34
  addresses, 2.8
  background checks, 13.19
  chat room, *see* Chat room
  connecting to, 2.6, 9.23-24, 9.26-27
  digital divide and, 11.9
  electronic commerce and, *see* Electronic commerce
  e-mail, see, E-mail
  etiquette, 2.37
  faxes sent using, 9.5
  freebies, 10.11
  FTP, 2.32-33
  history of, 2.3-4
  instant messaging, *see* Instant messaging
  job hunting, 16.5
  mailing lists, 2.34-35
  message board, 2.34
  newsgroups, 2.33-34
  number of users, 1.17
  operation of, 2.4-8
  paying for goods and services over, 7.29
  security, 12.22-26
  sharing photos on, 1.36
  software on, 1.14, 15
  viruses and, 3.4
  Web publishing, 2.26-29
  wide area network, 9.15
  See also World Wide Web
Internet addiction disorder (IAD): Users addicted to the Internet. **11.32**
Internet appliance: Computer with limited functionality whose main purpose is to connect to the Internet from home; sometimes called a Web appliance. **1.24**, **9.4, 11.5**
  processors, 4.11
Internet backup: Use of the Web to store data, information, and instructions. **7.27**
Internet Corporation for Assigned Names and Numbers (ICANN): Group that assigns and controls top-level domains. **2.8**
Internet Explorer: Microsoft Web browser included with Windows 98. 1.9, **8.18**
Internet filtering program, *see* Web filtering software
Internet hard drive: Service on the Web that provides storage to computer users; sometimes called online storage. **7.16,** 7.17, 7.22
Internet peer-to-peer network, 9.16
Internet postage, *see* E-stamp
Internet printing: Type of printing in which an Internet service on the Web sends a print instruction to a printer; the printer may be at a location different from the computer or device that accessed the Web site. **6.13**
Internet service provider (ISP): Business that has a permanent Internet connection and provides temporary connections to individuals and companies for free or for a fee. 1.18, 1.36, **2.5**
  selecting, 8.51-52
  Web hosting, 10.20
Internet telephone software: Software used to digitize and compress conversation and transmit it over the Internet to a called party. **9.8**
Internet telephony: Technology that allows users to converse over the Web, just as if they were on the telephone. **9.7**, **6.24**
Internet2 (I2): Internet-related research and development project that uses an extremely high-speed network to develop and test advanced Internet technologies for research, teaching, and learning. **2.4**
Interpolated resolution, *see* Enhanced resolution
Interpreter: Program that translates and executes one 3GL program code statement at a time, by reading a code statement, converting it to one or more machine language instructions, then executing the instructions before moving to the next code statement in the program. **15.18**
Interrupt request (IRQ): Communications line between a device and the processor. **8.13**
Intrabusiness e-commerce, *see* Business-to-employee
Intranet: Internal network that applies Internet technologies; used to make company information accessible to employees and facilitate working in groups. **9.20, 10.8**
IP address: Short for Internet protocol address, a number that uniquely identifies each computer or device connected to the Internet, consisting or four groups of numbers, each separated by a period. **2.8**
IPO chart: Chart that identifies a program's inputs and outputs, and the processing steps required to transform the inputs into outputs. Also called a defining diagram. **15.4**
IrDA (Infrared Data Association): Organization that sets standards for IrDA ports. **4.29**
IrDA port: Port that communicates with the system unit by transmitting data via infrared light waves instead of cables; used by wireless devices. **4.29**, 9.39
Iris recognition system: Biometric device that reads patterns in the tiny blood vessels in the back of the eye. **12.12**
ISA (Industry Standard Architecture) bus: Most common and slowest expansion bus, used to connect devices such as a mouse, modem card, sound card, and low-speed network interface card. **4.31**
ISDN (Integrated Services Digital Network): Set of standards for digital transmission of data over standard copper telephone lines, allowing one telephone line to carry three or more signals at once. **9.26**
ISDN adapter, *see* ISDN modem
ISDN modem: Modem that sends and receives digital data and information between a computer and an ISDN line. Also called an ISDN adapter. **9.28**
Isolated data: Data stored in many files. **13.12**
Issuing authority (IA), *see* Certificate authority (CA)
IT consultant, 11.37
IT department, working in, 16.8
IT personnel, *see* Career
IT professionals, careers, see Careers
IT professionals, SDLC and, 14.4
Itanium™: Intel processor used in workstations and low-end servers. **4.10**
Iteration control structure: Used in structured design, a control structure that is used when one or more actions are to be performed repeatedly as long as a certain condition is met. Each repetition sometimes is called a loop. Two forms of the repetition control structure are the do-while and do-until. Also called repetition control structure. **15.8**

Java: Compiled object-oriented programming language used to write stand-alone applications, as well as applets and servlets. **15.34**-36
JavaBeans: Code segments used to create Java applications; platform independent, enabling the code to be run on any computer or operating system. Also called beans. **15.35**
JavaScript: Interpreted language that allows the adding of functionality to Web pages by inserting JavaScript code within an HTML document. JavaScript brings a Web page to life by adding dynamic content and interactive elements. 1.14, **15.35**
Jaz® disk: Removable hard disk that can store up to 2 GB. **7.13**
Jewel box: Protective case for a compact disc. **7.19**
Job: Operations the processor manages, including receiving data from an input device, processing instructions, sending information to an output device, and transferring items from storage to memory and from memory to storage. **8.10**-11

Jobs, Steven, 8.21
Join operation: Relational algebra operation that combines data from two or more tables using a common column. **13.24**
Joint-application design (JAD) session: A lengthy, structured, group work session where users and IT professionals discuss an aspect of the project; the goal being to obtain group agreement on an issue. **14.8**
Joint Photographic Experts Group, *see* JPEG
Joule: Unit of energy a surge protection device can absorb before it can be damaged. **12.19**
Joystick: Pointing device that is a vertical lever mounted on a base, moved in different directions to control the actions of a vehicle or player; used with games or flight and driving simulations. **5.11**
JPEG (Joint Photographic Experts Group): File format for graphical images that uses compression techniques to reduce a file's size, which results in faster downloading of Web pages. **2.19**
JScript: A subset of JavaScript supported by Internet Explorer that is needed to run a JavaScript program in a browser. **15.36**

K, *see* Kilobyte
Kapor, Mitch, 11.35
Katz, Philip, 8.29
KB, *see* Kilobyte
Kernel: Core of an operating system that manages memory and devices; maintains the computer's clock; starts applications; and assigns the computer's resources. **8.4**
Key escrow: Proposed U.S. government plan to use independent escrow organizations that would have custody of private keys to decode encrypted messages. **12.17**
Key field: Field that uniquely identifies each record in a file. Also called a primary key. **13.5**
Keyboard: Input device that contains keys a user presses to enter data into the computer. 1.5, **5.4**-6
  connecting, 4.27
  handheld computer, 5.17
  injuries from, 11.31
  notebook computer, 8.54
Keyguard: Metal or plastic plate placed over a keyboard that allows users to rest their hands on the keyboard without accidentally pressing any keys; also guides a finger or pointing device so only one key at a time is pressed. Keyguards are used by people with limited hand mobility. **5.31**
Keywords, *see* Search text
Kilobits per second (Kbps): Measure of data transfer rate; the number of kilobits a line can transfer in one second. **9.26**
Kilobyte (KB or K): 1,024 bytes. **4.16**
Kingston Technology, 7.13
Kiosk: Freestanding computer used to provide information to the public that usually has a touch screen for input; advanced kiosks allow customers to place orders, make payments, and access the Web. **1.34,** 5.12
Knowledge base: Component of expert system that is the combined subject knowledge and experiences of human experts. **13.40**
Kodak, 7.21

L3 cache: Cache separate from processor chips on the motherboard and exists only on computers that use L2 advanced transfer cache. **4.20**
Label: Text entered in a cell that identifies data and helps organize a worksheet. **3.12**
Label printer: Small nonimpact printer that prints on an adhesive-type material that can be placed on a variety of items such as envelopes, packages, floppy disks, CDs, DVDs, audiocassettes, photographs, file folders, bar codes, and e-stamps. **6.21**
LAN, *see* Local area network
LAN adapter, *see* Network interface card
Landscape orientation: Page that is wider than it is tall, with information printed across the widest part of the paper. **6.12**
Laptop computer, *see* Notebook computer
Large business user: User in a business that has hundreds or thousands of employees across a region, a country, or the world. 1.28, **1.33**
  storage and, 7.5, 7.31
Large-format printer: Printer that creates large-scale, photo-realistic quality color prints. **6.22**
Laser printer: High-speed, high-quality nonimpact printer that creates images using a laser beam and powdered ink, called toner. The laser beam produces an image on a special drum inside the printer. The light of the laser alters the electrical charge on the drum wherever it hits, causing toner to stick to the drum and then transfer to paper through a combination of pressure and heat. **6.16**-18
Layout chart: Chart for a programmer that contains technical designs for each input and output using programming-like notations for the data items. **14.27**
LCD (liquid crystal display): Display method used in LCD displays and monitors that has liquid crystals contained between two sheets of material. When an electric current passes through the crystals, they twist. This causes some light waves to be blocked and allows others to pass through, which creates the images on the screen. **6.5**-8, 6.10
LCD displays: Flat-panel displays that use liquid crystal to present information on the screen. The liquid crystal is contained between two sheets of material. When an electric current passes through the crystals, they twist. This causes some light waves to be blocked and allows others to pass through, which creates the images on the screen. Because they are lightweight and consume less than one-third of the power of a CRT monitor, LCD displays are ideal for mobile users or users with space limitations and are often used in notebook and handheld computers. **6.5**-8, 6.10
LCD monitors: Flat-panel display devices that use liquid crystal to present information on the screen. The liquid crystal is contained between two sheets of material. When an electric current passes through the crystals, they twist. This causes some light waves to be blocked and allows others to pass through, which creates the images on the screen. LCD monitors are lightweight, consume less than one-third of the power of a CRT monitor, and save space on a desktop. **6.5**-8, 6.10
LCD projector: Projector that uses liquid crystal technology, attaches directly to a computer, and uses its own light source to display information shown on the computer screen. **6.25**
Leading: Management activity that involves instructing and authorizing others to perform the necessary work. Sometimes called directing. **13.32**
Leasing computer, 1.23
Legal software: Software that assists in the preparation of legal documents and provides legal advice to individuals, families, and small businesses. **3.28**
Letter quality (LQ): Describes print output that is a quality acceptable for business letters. **6.14**
Level 1: Simplest RAID storage design, called mirroring, which has one backup disk for each disk, thereby offering data duplication. **7.14**
Level 1 (L1) cache: Cache built directly into the processor chip; it usually has a very small capacity, ranging from 8 KB to 64 KB but the most common size is 16 KB. Also called primary cache or internal cache. **4.19**
Level 2 (L2) cache: Cache that is slightly slower than Ll cache but has a much larger capacity, ranging from 64 KB to 4 MB; also called external cache. When discussing cache, most users are referring to L2 cache. **4.19**
Light pen: Handheld input device that contains a light source or can detect light. Some light pens require a specially designed monitor, while others work with a standard monitor. Objects on the screen are selected by pressing the light pen against the surface of the screen or by pointing the light pen at the screen and then pressing a button on the pen. **5.12**
Line chart: Chart that shows a trend during a period of time, as indicated by a rising or falling line. **3.14**
Line-of-site transmission: Transmission between microwaves in a straight line with no obstructions. **9.37**
Line printer: High-speed impact printer that prints an entire line at a time. **6.14**-15
Link, *see* Hyperlink
Linux: Popular, free, multitasking UNIX-type operating system. In addition, Linux also includes many free programming languages. **8.24**, 15.20
Liquid crystal display, *see* LCD (liquid crystal display)
LISTSERVs: Name given to some mailing lists, after a popular mailing list software product. **2.34**
Local area network (LAN): Network that connects computers and devices in a limited geographical area such as a home, school computer laboratory, office building, or closely positioned group of buildings. 1.16, 1.33, **9.12**-14
  client/server, 9.14
  peer-to-peer, 9.13
  powerline, 9.22
  topologies, 9.18-19
  wireless, 9.12, 9.36
Local bus: High-speed expansion bus that connects higher speed devices such as hard disks. **4.31**
Local/Regional ASP, 3.36
Location conversion: In a larger systems consisting of multiple sites, the process of converting each site separately at different times using either a direct or parallel conversion. Also called a phased conversion. **14.32**
Log, *see* Audit trail
Log on: Process of accessing a network. **8.16**
Logic: Processing requirements for each program in a system, identified by the systems analyst during program design. **14.28**
Logic bomb: Virus that activates when it detects a certain condition. **12.4**
Logic error: Flaw in the design that generates inaccurate results. **15.12**-13
Logical design: Detailed analysis sometimes is called logical design because the systems analysts develop the proposed solution without regard to any specific hardware, making no attempt to identify the procedures that should be automated and those that should be manual. *See also* detailed analysis. **14.15**
Logical operations: Operations of the arithmetic/logic unit that use conditions along with logical operators such as AND, OR, and NOT. **4.7**
Logistics companies, *see* Fulfillment companies
Logitech, 5.9
Loop: A construct that performs one or more actions repeatedly as long as a certain condition is met. **15.8**
Low-level language: Programming language that is machine dependent, meaning that it is written to run on one particular computer; includes machine and assembly languages. **15.16**
Luquis, Lavonne, 2.35

Mac OS: Multitasking operating system available only for computers manufactured by Apple. **8.21**
Machine cycle: Comprised of fetching, decoding, executing, and storing operations; also called instruction cycle. The total time required for a machine cycle is computed by adding together instruction time and execution time. **4.6**
Machine language: The first generation of programming languages that only the computer directly understands, producing instructions that use a series of binary digits (1s and 0s) that correspond to the on and off electrical states of a computer; machine-dependent. **15.16**
Machine-dependent language: Describes programming languages that run on only one particular computer and are not portable to other computers. **15.16**

Machine-independent language: Describes programming languages that run on many different types of computers and operating systems.. **15.16**
Macintosh, 1.19
  processors, 4.10
Macintosh operating system: Apple operating system that was the first commercially successful GUI. **8.21**
Macro: Sequence of keystrokes and instructions that a user records and saves. When the macro is run, it performs the sequence of saved keystrokes and instructions. **3.13**
Macro (application program): Series of statements that instructs an application how to complete a task; used to automate routine, repetitive, or difficult tasks in an application. **15.28**
Macro (programming): Statements that generate multiple machine language instructions for a single assembly language instruction; used to save time during program development. **3.13, 15.17**
Macro recorder: Tool that records all actions used to automate a routine or repetitive task; records until the user turns it off when finished recording the actions. The recorded actions become a macro. **15.28**
Macro virus: Virus that uses the macro language of an application, such as word processing or spreadsheet, to hide virus code. When a document is opened that contains an infected macro, the virus loads into memory; these viruses are often hidden in templates. 12.2, **12.4**
Macromedia, 15.41
Magazines, 16.15
  searching for, 14.22
Magnetic media: Storage media that uses magnetic patterns to store data, instructions, and information on a disk's surface. Most magnetic disks are read/write storage media. **7.8**
Magnetic-ink character recognition (MICR) reader: Device that can read text printed with magnetized ink, used by the banking industry for check processing. **5.30**
Mail server: Server that contains e-mail mailboxes. **2.31**
Mailbox: Storage location for e-mail that usually resides on the computer that is connected to the Internet, such as the server operated by an ISP or OSP. **2.31**
Mailing list: Group of e-mail names and addresses given a single name. When a message is sent to a mailing list, every person on the list receives a copy of the message in his or her mailbox. **2.34**
Main memory, *see* Dynamic RAM
Mainframe: Large, expensive, very powerful computer that can handle hundreds or thousands of connected users simultaneously and can store tremendous amounts of data, instructions, and information. **1.26**
Maintaining: Process of correcting errors and adding enhancements in programs. **15.15**
Maintaining data, 13.6-10
Maintaining files, 13.15-19
Maintenance, 8.60-61
Maintenance utilities, 7.15
Male connector: Connector that has one or more exposed pins, similar to the end of an electrical cord that would be plugged into a wall. **4.26**
Malicious-logic program: Program that acts without a user's knowledge and deliberately alters the computer's operations; includes viruses, worms, and Trojan horses. Also known as malware. **12.4**
Malware, *see* Malicious-logic program
Management information system (MIS): Information system that generates accurate, timely, and organized information, so managers and other users can make decisions, solve problems, supervise activities, and track progress. **13.36**
Managers: Employees responsible for coordinating the use of company resources. **13.32**
Margins: In a document, the portion of a page outside the main body of text, including the top, the bottom, and both sides of the paper. **3.8**
Markups: Codes used by HTML that specify links to other documents, as well as how the Web page displays when viewed on the Web. Also called tags. **15.31**
Marquee: Text that animates by scrolling across a screen. **2.19**
Mass storage, *see* Storage
Math coprocessor, *see* Floating-point coprocessor
MB, *see* Megabyte
McNealy, Scott, 9.19
M-commerce (mobile commerce): E-commerce that takes place using mobile devices. **2.24, 10.3**
MCSE + Internet, 16.23
Mechanical mouse: Mouse that has a rubber or metal ball on its underside. When the ball rolls in a certain direction, electronic circuits in the mouse translate the movement of the mouse into signals the computer. **5.7**
Meetings
  groupware and, 9.10
  online, 9.9
Megabits per second (Mbps): Measure of data transfer rate; the number of megabits a line can transfer in one second. **9.26**
Megabyte (MB): Approximately one million bytes. **4.16**
Megahertz (MHz): One million ticks of the system clock. **4.8**
Memo: Field data type that contains lengthy text entries. **3.16**
Memory: Temporary storage place for data, instructions, and information, consisting of one or more chips on the motherboard or some other circuit board in the computer. Sometimes called primary storage. **1.6, 4.15**
  access times, 4.22
  data type, 13.5
  nonvolatile, 7.3
  notebook computer, 8.54
  operating system and, 1.12, 3.3, 8.10
  printing and, 6.18
  processor and, 7.3
  purchasing computer and, 8.49
  starting computer and, 8.6
  storage versus, 7.2-5
  types of, 4.15-22
  virtual, 8.10
  volatile, 7.3
Memory cache: Type of cache that helps speed the processes of the computer by storing frequently used instructions and data; also called cache store or RAM cache. **4.19**
Memory card: Smart card that has only storage capabilities; used in digital cameras and other handheld devices. **7.29**
Memory management: Process of the operating system optimizing the use of random access memory. **8.10**
Memory module: Small circuit board that RAM chips reside on, which inserts into the motherboard. Three types of memory modules are SIMMs, DIMMs, and RIMMs. 4.3, 4.4, **4.18**
Memory resident: Part of operating system that remains in memory while the computer is running. **8.4**
Menu: Screen display containing a list of commands from which a user can select. **3.5, 8.8**
  shortcut, 3.6
Menu generator: Application generator tool that allows the developer to create a menu, or list of choices, for the application options. **15.28**
Menu-driven: Program that provides menus as a means of entering commands. **5.3**
Merchant account: Bank account established by an e-retailer to accept credit card payments from customers; the e-retailer pays the bank a one-time setup fee and an ongoing monthly fee to the bank, along with a commission on each transaction. **10.20**
Message: Something that tells an object what to do; that is, it indicates the name of the method to be used. **15.21**
Message board: Popular Web-based type of discussion group; also called a discussion board. **2.34**
Metadata, *see* Data dictionary
Metcalfe, Robert, 9.19
Method: In object-oriented program development, the procedure in the object that contains activities that read or manipulate the data. Also called operation. **15.20**
Metropolitan area network (MAN): Backbone network that connects local area networks in a metropolitan area such as a city or town and handles the bulk of communications activity, or traffic, across that region. A MAN typically includes one or more LANs, but covers a smaller geographic area than a WAN. **9.16**
Microbrowser: Special type of browser designed for Web-enabled handheld computers and devices such as cellular telephones; accesses and displays Web pages that contain mostly text. Also called minibrowser. **2.11**
Microcode: Instructions to program a PROM chip. **4.20**
Microfiche: Four-by-six-inch sheet of film used to store microscopic images of documents. **7.30**
Microfilm: 100-to-215-foot roll of film used to store microscopic images of documents. **7.30**
Microphone, 1.5, 1.6, 2.26, 5.14, 5.16
Microprocessor: Name sometimes given to a personal computer processor, because all the functions are on a single chip. **4.9**
Microsoft, 1.9
  history of, 3.5, 7
  operating systems, 8.17-20
  Web application, 3.34
  See also Windows
Microsoft Certified Database Administrator (MCDBA), 16.24
Microsoft Certified Professional (MCP), 16.18, 16.19
Microsoft Certified Solution Developer (MCSD), 16.20
Microsoft Certified Systems Engineer (MCSE), 16.18, 16.19, 16.22
Microsoft Network, The, 1.18
Microsoft Office User Specialist (MOUS), 16.18, 16.19
Microwave station: Earth-based reflective dish that contains the antenna, transceivers, and other equipment necessary for microwave communications. **9.37**
Microwaves: Radio waves that provide a high-speed signal transmission; involves sending signals from one microwave station to another. **9.37**
Middle management: Managers who are responsible for implementing the strategic decisions of executive management. **13.33**
MIDI, *see* Musical instrument digital interface (MIDI)
Mid-range server: Computer that is more powerful and larger than a workstation computer and often can support up to 4,000 connected users at the same time; in the past, mid-range servers were known as a minicomputers. **1.25**
Millennium bug: Bug that had the potential to cause serious financial losses for computers around the world. The bug took effect when the computer date rolled over to January 1, 2000. At that time, non-Y2K compliant computers read the date as 01/01/00. Computers that used just the last two digits of a year could not distinguish 01/01/1900 from 01/01/2000, which caused some computer hardware and software to operate according to the wrong date. Also called Y2K Bug. **15.14**
Minibrowser, *see* Microbrowser
Minicomputer, *see* Mid-range server
MIPS: Millions of instructions per second; measure of a CPU's speed. **4.6**
Mirroring, *see* Level 1
MIS director/CIO, 16.9
MMX™ (multimedia extensions): Set of instructions built into a processor that allows it to manipulate and process multimedia data more efficiently. **4.11**

Mnemonics: Meaningful abbreviations and codes for program instructions, used in assembly languages. Also called symbolic instruction codes. **15.16**
Mobile user: User that travels to and from a main office to conduct business. 1.23, **1.32**
  e-commerce, 2.24, 10.3
  hardware, 1.28, 4.33
  modems, 9.28
  software, 1.28
  storage, 7.28-29, 7.31
  theft and, 12.13
  See also Handheld computer
Mockup: Sample of the input or output that contains actual data, shown during detailed design to users for their approval. **14.27**
Modem: Communications device that converts data contained in analog signals to digital signals for transmission over standard telephone lines. 1.8, 1.9, 9.3, **9.28**
  cable, 9.29
  connecting, 4.27
  digital, 9.28
  DSL, 9.28
  external, 9.28
  fax, 6.26, 9.5
  internal, 9.28
  Internet access, 2.6
  ISDN, 9.28
  notebook computer, 1.32
  wireless, 9.28
Modem card: Expansion card, which is a communications device, that enables computers to communicate via telephone lines or other means; also called an internal modem. 4.4, **4.23, 9.28**
Moderated newsgroup: Newsgroup that has a moderator who reviews the content of newsgroup articles and posts them, if appropriate. **2.34**
Moderator: Person who reviews the content of newsgroup articles and posts them, if appropriate. **2.34**
Modulate: To change into an analog signal. **9.28**
Module: Section of a program that performs a single function **15.5**
MOLAP: Online analytical processing programs that use multidimensional databases. **13.37**
Monitor: Display device that is a separate plastic or metal case that houses a screen. 1.6, **6.4**
  CRT, 6.5, 10
  gas plasma, 6.8
  LCD, 6.5-8, 10
  television as, 6.12
  video cards and, 6.10-11
Monitoring utilities, 7.15
Monochrome: Display information that displays in one color on a different color background. **6.4**
Moore, Gordon, 4.15
Moore's Law, 4.15
Motherboard: Main circuit board in the system unit; sometimes called the system board. 1.6, **4.4**
Motorola, 6.6
Motorola processor: Processor used by Apple Macintosh and Power Macintosh systems; with a different design than the Intel-style processor. Increased the speed of the Apple PowerPC. **4.10**
Mouse: Pointing device that fits comfortably under the palm of a user's hand; the most widely used pointing device on desktop computers. 1.5, **5.7**
  connecting, 4.27
  injuries using, 11.31
  types, 5.7-8
  using, 5.8-9
Mouse pad: Rectangular rubber or foam pad that provides traction for a mouse and protects the ball in the mouse from a buildup of dust and dirt. **5.7**
Mouse pointer: Pointer that moves when the mouse is moved. **5.7**
Movies, DVD, 7.25
Movies, Web database, 13.29
Moving Pictures Experts Group (MPEG): Popular video compression standard. **2.22**
MP3: Technology that compresses an audio file to about one-tenth of its original size, while preserving the original quality of the sound. **2.20**, 9.16
MP3 players: Portable audio devices that can play MP3 files stored on a CD or miniature storage media. **2.20**
MPEG, *see* Moving Pictures Experts Group
MPR II: Set of standards that defines acceptable levels of electromagnetic radiation for a monitor. **6.11, 11.32**
Multidimensional database (MDDB): Database that stores data in dimensions. **13.27**
Multifunction device (MFD): Single piece of equipment that looks like a copy machine, but provides the functionality of a printer, scanner, copy machine, and sometimes a fax machine. Sometimes called multifunction peripherals or all-in-one devices. **6.26**-27
Multimedia: Any application that integrates text with one or more of the following elements: graphics, sound, video, virtual reality, or other media elements. **1.35, 2.18**-22
  processors and, 4.11
Multimedia authoring software: Software used to combine text, graphics, audio, video, and animation into an interactive presentation. Sometimes called authorware. **3.25**, **15.38**-40
Multimedia database: Database that stores images, audio clips, and/or video clips. **13.26**
Multiplexing: Technique used in ISDN that allows one telephone line to carry three or more signals at once. **9.26**
Multiprocessing: Operating system that can support two or more CPUs running programs at the same time. **8.9**
Multipurpose operating system: Operating system that works for both stand-alones and networks. **8.24**
Multiread CD-ROM drive: Drive that can read audio CDs, data CDs, CD-Rs, and CD-RWs. **7.22**
Multisession: Disc on which additional data, instructions, and information can be written to at a later time. **7.21**
Multitasking: Operating system that allows a single user to work on two or more applications that reside in memory at the same time. **8.9**
Multiuser: Operating system that enables two or more users to run a program simultaneously. **8.9**
Musculoskeletal disorder (MSD): Injury or disorder of the muscles, nerves, tendons, ligaments, and joints, including tendonitis and carpal tunnel syndrome; the largest job-related injury and illness problem in the United States today. Also called repetitive stress injury (RSI). **11.30-**31
Music
  downloading, 1.30, 7.23, 7.24
  e-commerce, 10.14, 15
  listening to, while on computer, 11.12
  input, 5.16
  Napster and, 9.16
  radio chats, 9.7
  sales information, 13.37
  See also MP3
Musical instrument digital interface (MIDI): Serial port that connects the system unit to a musical instrument, such as an electronic keyboard. **4.28**

Nanosecond (ns): One billionth of a second; used to state access times. **4.22**
Napster, 1.30, 9.16
Nassi-Schneiderman (N-S) chart: Design tool that graphically shows the logic in a solution algorithm. Nassi-Schneiderman charts are designed to represent each of the three basic control structures, so sometimes are called structured flowcharts. **15.11**
National ISP: Type of ISP that provides access to the Internet through local telephone numbers in most major cities and towns nationwide and usually offer more services and generally have a larger technical support staff than regional ISPs. **2.5**
National Television Standards Committee (NTSC): Industry members that have technical expertise about television-related issues. **6.12**
Near letter quality (NLQ): Describes print output that is slightly less clear than letter quality. **6.14**
Net, *see* Internet
.NET: Microsoft's Web applications that enable users to access Microsoft software on the Web from any type of device or computer that can connect to the Internet. **3.34, 10.8**
Netiquette: Short for Internet etiquette, the code of acceptable behaviors users should follow while on the Internet. **2.37**, 9.8
Netscape, 16.7
NetWare: Novell's widely used network operating system designed for client/server networks. **8.22**
Network +, 16.22
Network: Collection of computers and devices connected together via communications devices and media such as modems, cables, telephone lines, and satellites that allows users to share resources with other users. 1.10, **1.16, 2.2, 8.15, 9.11-**23
  bus, 9.17
  communications technologies, 9.18-20
  connecting, 9.30
  extranets, 9.20
  firewall, 12.25
  home, 9.22-23, 11.5
  intranets, 9.20
  LAN administrator, 16.9
  local area, *see* Local area network
  metropolitan area, 9.16
  ring, 9.17
  security, 12.22-26
  star, 9.18
  telephone, 9.25-27
  wide area, *see* Wide area network
Network administrator: Operations person in charge of a network. 8.30, **9.14,** 12.22
Network agent: Sophisticated type of intelligent agent that performs tasks on remote computers before bringing the results back to a user; used to search the Web or other networks for information. Sometimes called a bot. **11.29**
Network Associates, 12.5
Network-attached storage (NAS): Device that adds additional hard disk space to a network. **7.27**
Network card, *see* Network interface card
Network interface card (NIC): Expansion card that is a communications device, which allows a computer to communicate via a network; also called a network card or LAN adapter. 4.4, **4.23, 9.29**
Network operating system: Operating system that supports a network by organizing and coordinating the activities on a local area network; also called a network OS or NOS. **8.15,** 8.22-24, **9.12**
Network OS, *see* Network operating system
Network security specialist, 12.35, 16.9
Network server: Server that manages network traffic. **9.14**
Network site license: Agreement that allows network users to share a single copy of software, which resides on the network server. **12.15**
Network topology: Configuration, or physical arrangement, of the devices in a communications network. Three commonly used network topologies are bus, ring, and star. **9.16**-18
Networking certifications, 16.18, 16.20-22
Neural network: Computer system that attempts to simulate the behavior of the human brain by connecting thousands of processors together much like the neurons in the brain are connected. **11.22**
News server: Computer that stores and distributes newsgroup messages. **2.33**
News Web page: Web page that contains newsworthy material. **2.17**
Newsgroup: Online area on the Web where users conduct written discussions about a particular subject; also called a discussion. **2.33, 3.32, 9.7**
  spam and, 12.31
Newspapers, searching for, 14.22
Newsreader: Software used to participate in a newsgroup; included in most browsers. **2.33, 3.32**
Node: Any computer that directly connects to a network; also called host. **2.4, 9.12**

Noise: Any unwanted signal, usually varying quickly, that is mixed with normal voltage entering a computer; an electrical disturbance that can degrade communications. **9.33,** 9.34, 9.35, **12.18**
Nonimpact printer: Printer that forms characters and graphics on a piece of paper without actually striking the paper. Some spray ink, while others use heat and pressure to create images. **6.15-**22
Nonmanagement employees: Include production, clerical, and staff personnel. **13.33**
Nonprocedural language: Programming language in which programmer only specifies what the program should accomplish without explaining how; describes 4GLs. **15.19**
Nonresident: Part of operating system that remains on the hard disk until it is needed. **8.4**
Nonvolatile memory: Memory that does not lose its contents when power is removed from the computer; includes ROM, flash memory, and CMOS. **4.16, 7.3**
Normalization: In a relational database, process designed to make sure the data within the relations (tables) contains the least amount of duplication. **13.22**
NOS, *see* Network operating system
Notebook computer: Portable, personal computer small enough to fit on a lap; also called a laptop computer. **1.22**
  displays, 6.6-7
  floppy disk drive, 7.6
  keyboards, 5.4, 5.5
  mobile users, 1.32, 1.34
  PC Cards, 7.28
  security and, 12.13
  system unit, 4.3, 4.33
Notepad: Component of personal information manager software used to record ideas, reminders, and other important information. **3.20**
ns, *see* Nanosecond
NSFnet: National Science Foundation's network of five supercomputer centers. **2.4**
NT, *see* Windows NT
NTSC (National Television Standards Committee) converter: Device used to connect a computer to a standard television set that converts the digital signal from the computer into an analog signal that the television set can display. **6.12**
Numeric: Field data type that contains numbers only. **3.16**
Numeric check: Validity check that ensures only numeric data is entered into a field. **13.9**
Numeric coprocessor, *see* Floating-point coprocessor
Numeric data type, 13.5
Numeric keypad: Calculator-style arrangement of keys on the keyboard that includes numbers, a decimal point, and some basic mathematical operators. **5.4**

Object: Picture, audio, video, or a document created in other applications such as word processing or spreadsheet. **3.16**
  class, 15.20
  data type, 13.5
  entity, 14.16
  possessed, 12.10
Object (database): Item that contains both data and the activities that read or process the data. **13.26, 15.20**
Object code: Machine language version that results from compiling the 3GL. Also called object program. **15.18**
Object instance: Specific occurrence of an object or object class. **15.21**
Object Management Group (**OMG**): An international organization that establishes guidelines and specifications for OO application development; uses the CORBA standard. **15.21**
Object-oriented (**OO**) **approach**: Approach to developing software in which the programmer can package the data and the program (or procedure) into a single unit called an object. When the structure of an object changes, any program that accesses the object automatically accesses the change. **15.20**
Object-oriented database (OODB): Database that stores data in objects. **13.26**
Object-oriented program development, 15.20-21
Object-oriented programming (OOP) language: Programming language used to implement the design model of an object-oriented approach. The OOP language is event driven. **15.21**
Object-oriented systems analysis and design, 14.15
Object program: Machine language version that results from compiling the 3GL. Also called object code. **15.18**
Object query language (OQL): Query language used by object-oriented and object-relational databases. **13.27**
Object-relational database: Database that combines features of a relational and object-oriented data model. **13.21**
OCR (optical character recognition): Technology that involves reading typewritten, computer-printed, or handwritten characters from ordinary documents and translating the images into a form that a computer can understand. **5.27**
OCR devices: Devices that include a small optical scanner for reading characters and sophisticated software for analyzing what is read. **5.27**
OCR software: Software that can read and convert many types of text documents; included with many scanners. **5.26**
Office automation, *see* Office information system
Office information system (OIS): Information system that increases employee productivity and assists with communications among employees, using computers and other electronic devices. Sometimes called office automation. **13.34**
Offline: State of not being connected to the Internet. **2.24**
Offsite: Location separate from a computer site. **12.19**
Online: Describes condition of computer being connected to a network. **1.16**
Online analytical processing (OLAP): Programs that analyze data for a decision support system. **13.37**
Online auction: Online sale that allows people to bid on items being sold by other people. The highest bidder at the end of the bidding period purchases the item. **2.25, 10.6, 11.14**
Online backup service: Web site that automatically backs up files to an online location. **12.21**
Online banking: Use of the Web to pay bills from a computer, that is, to transfer money electronically from checking or credit card accounts to a payee's account; also used to download monthly banking transactions. **3.28, 10.14, 11.14-**15
Online catalog, *see* Electronic storefront
Online Help: Electronic equivalent of a user manual that assists in learning how to use an application software package; usually integrated into an application software package. **3.36**
Online learning, *see* Distance learning (DL)
Online malls, 10.20
Online meeting: Meeting that allows users to share documents with others in real time. All participants see the document at the same time. As someone changes the document, everyone can see the changes being made. **9.9**
Online-print service: Service used to send high-resolution printed images through the postal service. Many have a photo community where photographs can be posted on the Web for others to view. **3.29**
Online security service: Web site that evaluates a computer to check for Web and e-mail vulnerabilities, then provides recommendations of how to deal with the vulnerabilities. **12.26**
Online service provider (OSP): Business that not only supplies Internet access, but also has many members-only features that offer a variety of special content and services. 1.18, 1.36, **2.5-**6
  Web hosting, 10.20
Online stock trading, *see* Online trading
Online storage, *see* Internet hard drive
Online storage services: Web sites that provide data storage to computer users. **10.11**
Online store, 10.17-25
Online trading: Use of the Web to invest in stocks, options, bonds, treasuries, CDs, money markets, annuities, and mutual funds — without using a broker. **10.14, 11.16**
Online transaction processing (OLTP): Transaction processing system in which a computer processes each transaction as it is entered. **13.35**
On-screen keyboard: Keyboard in which a graphic of a standard keyboard displays on a user's screen; a pointing device can be used to press the keys. On-screen keyboards are used by people with limited hand mobility. **5.32**
Onsite service agreement, 8.52
Open language: A program, such as JavaScript, that anyone can use without purchasing a license. **15.36**
Open-source software: Software whose code is available to the public. **8.24**
Operating environment: GUI that works in combination with an operating system to simplify its use. **8.18**
Operating system (OS): Set of programs containing instructions that coordinate all the activities among computer hardware resources; also contains instructions that allow a user to run application software. Most operating systems perform similar functions that include starting the computer, providing a user interface, managing programs, managing memory, scheduling jobs, configuring devices, accessing the Web, monitoring performance, and providing housekeeping services; some also control networks and administer security. Also called software platform, or platform. **1.12, 3.3, 8.3-**27, 9.12
  certifications, 16.18
  code for, 15.20
  embedded, 8.25-27
  functions, 8.4-16
  handheld computers and, 8.3, 8.25-27
  maintenance functions, 8.61
  multiprocessing, 8.9
  multitasking, 8.9, 8.23, 8.24
  multiuser, 8.9
  network, 8.15, 8.22-24
  personal computer, 1.20
  single user/single tasking, 8.8
  stand-alone, 8.17-22
  types of, 8.17-27
Operation: In object-oriented program development, the procedure in the object that contains activities that read or manipulate the data. Also called a method. **15.20**
Operational decision: Decision that involves day-to-day activities within a company. **13.33**
Operational feasibility: Measure of how well the proposed information system will work in the organization. **14.6**
Operational management: Managers who supervise the production, clerical, and other nonmanagement employees of a company. **13.33**
Optical character recognition, *see* OCR
Optical disc, *see* Compact disc
Optical fiber: Each strand in a fiber-optic cable. **9.34**
Optical mark recognition (OMR): Devices that read hand-drawn marks such as small circles or rectangles. **5.28**
Optical mouse: Mouse that has no moving mechanical parts inside, instead, it uses devices that emit and sense light to detect the mouse's movement. Some use optical sensors; others use laser. **5.7**
Optical reader: Device that uses a light source to read characters, marks, and codes and then converts them into digital data that a computer can process. Thee types of optical readers are: optical character recognition, optical mark recognition, and bar code scanner. **5.27-**30
Optical resolution: Measure of actual photographed resolution. **5.20**

Optical scanner: Light-sensing input device that reads printed text and graphics and then translates the results into a form the computer can use. Also called a scanner. 1.5, 1.36, **5.25-**27
  fingerprint, 12.11
Optically-assisted hard drive: Hard disk that combines laser and optic technologies with the magnetic media and have potential storage capacities of up to 280 GB. **7.10**
Oracle Certification Database Administrator, 16.24
Oracle Corporation, 13.21, 33
Organized information: Information arranged to suit individual needs and requirements. **13.30**
Organizing: Management activity that identifies and combines resources so that company goals and objectives can be reached. **13.32**
OS/2 Warp: IBM's GUI multitasking client operating system that supports networking, the Internet, Java, and speech recognition. **8.22**
OS/2 Warp Server: IBM network operating system for e-business. **8.23**
Output: Data that has been processed into a useful form, called information; computers process input into output. Types of output are: text, graphics, audio, and video. **1.5, 6.2-**31
  audio, 6.23-24
  date projectors, 6.25
  design, 14.27
  display devices, 6.4-12
  fax, 6.25-26
  multifunction devices, 6.26-27
  physically challenged users, 6.29-30
  printers, 6.12-22
  purchasing computer and, 8.49
  speakers, 6.23
  storage devices as, 7.4
  terminals, 6.27-29
  types of, 6.2-3
  voice, 6.24
Output device: Any hardware component that can convey information to a user. Commonly used output devices include display devices, printers, monitors, speakers, headsets, data projectors, facsimile machines, and multifunction devices. **1.6, 6.4-**30
Overvoltage: Significant increase in electrical power. **12.18**

P2P: Internet network that enables users with the same networking software to connect to each other's hard disks and exchange files directly. **9.16, 10.6**
Packaged software (applications): Copyrighted retail software that meets the needs of a wide variety of users. **1.13**
Packaged software (system development): Prewritten software available for purchase and available for different computers. Also called packaged Commercial off-the-shelf software. Two types of packaged software are horizontal application software and vertical application software. **14.19**, 15.3
Packard, David, 6.18
Packet switching: Used in Internet transmissions, the technique of breaking a message into individual packets, sending the packets along the best route available, and then reassembling the data. **9.20**
Packets: Small pieces that data is divided into, when a computer sends data over the Internet. Each packet contains the data, as well as the recipient (destination), origin (sender), and the sequence information used to reassemble the data at the destination. **9.19**
Page: Amount of data and program instructions that can swap at a given time. **8.10**
Page description language (PDL): Printer language that tells a printer how to lay out the contents of a printed page. Two common page description languages are PCL and PostScript. **6.18**
Page layout: Process of arranging text and graphics in a document. **3.23**
Paging: Technique of swapping items between memory and storage. **8.10**
Paint software: Software used to draw pictures, shapes, and other graphical images with various onscreen tools such as a pen, brush, eyedropper, and paint bucket; sometimes called illustration software. **3.24**
Paint/image editing software
  personal, 3.29
  professional, 3.24
Palm handheld computer, 5.14, 5.17
Palm OS®: Operating system for Palm and Visor handheld computers. **8.26**
Palm OS devices, 8.56
Palmtop computer, *see* Handheld computer
Parallel conversion: In converting to a new system, the process of running the old system alongside the new system for a specified time. Results from both systems are compared, and if they agree, the old system either is terminated abruptly or phased out. **14.32**
Parallel port: Interface that connects devices to the system unit by transmitting more than one bit at a time; used for a device that requires fast data transmission rates, such as a printer. **4.27**
Parallel processing: Use of multiple processors simultaneously to execute a program, which speeds processing times. **4.13**
Parent: Second oldest copy of a file. **12.21**
Parker, D., 12.26
Partitions: Separate areas that a formatted hard disk is divided into by issuing a special operating system command. Each partition functions as if it were a separate hard disk drive. Users often partition a hard disk so they can install multiple operating systems on the same hard disk. **7.12**
Passive-matrix display: Display technology that uses fewer transistors and requires less power than an active-matrix display, resulting in color that often is not as bright as that in an active-matrix display. Images on a passive-matrix display are viewed best when working directly in front of the display. Also called dual-scan display. **6.8**
Password: Combination of characters associated with a user name that allows access to certain computer resources. **8.16, 12.8-**10
  cookies and, 12.29
Payments, e-retailer and, 10.20-22
PC camera, *see* PC video camera
PC Card: Thin credit card-sized device that adds memory, disk drives, sound, fax/modem, communications, and other capabilities to a mobile computer; formerly known as PCMCIA cards. **4.24-**25, **7.28**, 9.28
PC Card bus: Bus for a PC Card. **4.32**
PC video camera: Digital video camera that allows a home user to record, edit, and capture video and still images and to make video telephone calls on the Internet. Also called PC camera. 1.5, 1.6, 1.36, **5.22**, 11.4
PCI (Peripheral Component Interconnect) bus: Current local bus standard. **4.31**
PCL (Printer Control Language): Standard printer language, developed by Hewlett-Packard, that supports the fonts and layout used in standard office documents. **6.18**
PCMCIA card, *see* PC Card
PDA (Personal Digital Assistant): One of the more popular handheld computers in use today, providing personal organizer functions such as a calendar, appointment book, address book, calculator, and notepad; most also offer basic software applications such as word processing and spreadsheet. **1.23-**24
Peer-to-peer LAN: Simple, inexpensive network that typically connects less than 10 computers together. **9.13**
Pen, *see* Stylus
Pentium®: Intel processor used by most high-performance PCs. **4.10**
Performance monitor: Operating system program that assesses and reports information about various system resources and device; also can check the number of reads and writes to a file. **8.14**
Performance monitoring: During the support phase of the SDLC, the determination by the systems analyst of whether the system is inefficient at any point and if the inefficiency is causing a problem. **14.33**
Peripheral: Any external device that attaches to the system unit. **1.6**
  connecting, 4.27-29
Perl: (**P**ractical **E**xtraction and **R**eporting **L**anguage): Originally developed as a procedural language similar to C; however, the latest release of PERL is an interpreted scripting language, with powerful text processing capabilities enabling it to become a popular language for writing scripts. **15.36**
Permanent storage, *see* Storage
Personal Communications Services (PCS): Set of technologies used for completely digital cellular devices. **9.37**
Personal computer: Computer that can perform all of its input, processing, output, and storage activities by itself. Two major categories of personal computers are desktop computers and notebook computers. **1.19,** 4.3
  categories, 1.20-22
  processors, 4.10
  installing, 8.57-59
  maintenance, 8.60-61
  processors, 4.9-11
  purchasing, 8.48-53
Personal Computer Memory Card International Association (PCMCIA): Organization that develops standards for PC cards. **4.24**
Personal DTP software: Software used to create newsletters, brochures, and advertisements; postcards and greeting cards; letterhead and business cards; banners, calendars, and logos; and Web pages. **3.29**
Personal finance software: Simplified accounting program that helps home users and small office/home office users balance their checkbook, pay bills, track personal income and expenses, track investments, and evaluate financial plans, in addition to providing online services. 1.29, **3.27, 11.14**
Personal firewall: Software that detects and protects a personal computer and its data from unauthorized intrusions. **12.25**
Personal identification number (PIN): Numeric password. **12.10**
Personal information manager (PIM): Software application that includes an appointment calendar, address book, notepad, and other features used to organize personal information. **3.20**, 9.10
Personal use, software for, 3.26
Personal Web page: Web page maintained by a private individual who normally is not associated with any organization. **2.17**
Phased conversion: In larger systems consisting of multiple sites, the process of converting each site separately at different times using either a direct or parallel conversion. Also called location conversion. **14.32**
Phases: Categories in the system development life cycle, including planning, analysis, design, implementation, and support; categorizing activities helps organize the processes. **14.2**
Phoneline network: Easy-to-install and inexpensive network that uses existing telephone lines in the home. **9.22**
Photo communities: Name given to some Web sites that allow a user to create an online photo album and store digital photographs free of charge. **1.36**
Photo printer: Nonimpact color printer that can produce photo lab quality pictures as well as printing everyday documents; many use ink-jet technology. In addition, many photo printers can read media directly from a digital camera. **6.20**
PhotoCD: Compact disc that contains digital photographic images saved in the PhotoCD format. **7.21**
Photo-editing software: Software used to edit digital photographs by removing red-eye, adding special effects, or creating electronic photo albums. **3.29,** 7.22
Physical design: Specifications for the hardware and software for automated procedures. Activities performed include developing designs for the databases, inputs, outputs, and programs. **14.26**

Physical transmission media: Media that use wire, cable, and other tangible (touchable) materials to send communications signals. **9.32**-34
Physically challenged users, 11.10-11
  input devices, 5.31-32
  output devices, 6.29-30
  telecommuting, 11.26
Picture CD: Single-session disc that stores digital versions of photographs for consumers. 1.8, **7.21**
Pie chart: Chart that has the shape of round pies cut into pieces or slices, showing the relationship of parts to a whole. **3.14**
Piggyback upgrade: Processor upgrade that stacks the new processor chip on top of the old one. **4.11**
Pilot conversion: In converting to a new system, the process of having only one location in the company use the new system, so it can be tested. Once the pilot site approves the new system, other sites then convert using one of the other conversion strategies. **14.32**
Pin grid array (PGA) package: Chip package that holds a larger number of pins because the pins are mounted on the surface of the package. **4.4**
  chips, 4.12
Pipelining: Process of the processor beginning to execute a second instruction before it completes the first instruction, which results in faster processing because the processor does not have to wait for one instruction to complete the machine cycle before fetching the next. **4.7**
Pixel: Short for picture element, a single point in an electronic image. The greater the number of pixels, the better the quality of an image. **5.20, 6.5**
  scanner, 5.26
  video cards, 6.10
Pixel pitch, *see* Dot pitch
PKZIP, 8.29
Plaintext: Unencrypted, readable data. **12.16**
Planning: Management activity that establishes goals, objectives, and strategies. **13.32**
Planning phase: First phase in SDLC that begins when the steering committee receives a project request. Activities performed during the planning phase include review and approve the project requests, prioritize the project requests, allocate resources to approved projects, and form a project development team for each approved project. **14.12**
Platform, *see* Operating system
Platter: Item inside a hard disk that is made of aluminum, glass, or ceramic and is coated with a material that allows items to be recorded magnetically on its surface. **7.10**
Player: Program contained in operating systems that can play the audio in MP3 files on a computer. **2.20**
Plotters: Sophisticated printers that produce high-quality drawings by using a row of charged wires (called styli) to draw an electrostatic pattern on specially coated paper and then fuse toner to the pattern. **6.22**
Plug and Play: Technology in a computer that automatically configures cards and other devices as they are installed. **4.24,** 4.28, 4.29, **8.13**
Plug-in: Program that extends the capability of a browser. **2.28**
Pocket PC: Handheld computer. **8.26,** 8.56
Pocket PC OS: Scaled-down operating system developed by Microsoft that works on a Pocket PC handheld computer. **8.26**
Point: Measurement of font size, equal to approximately 1/72 of an inch in height. **3.10**
Point of presence (POP): Access point on the Internet that is connected to by dialing a telephone number supplied by an Internet service provider. **2.5**
Point-and-shoot camera: Digital camera that is affordable and lightweight and provides acceptable quality photographic images for the home or small business user. **5.19**
Pointer: Small symbol on the screen in a graphical user interface that moves when the mouse is moved, often taking the shape of an I-beam, a block arrow, or a pointing hand. **3.4, 5.7**
Pointing device: Input device that allows a user to control a pointer to move or select items on the screen. **5.7**
  handheld computers, 8.56
  notebook computer, 8.54
Pointing stick: Pressure-sensitive pointing device shaped like a pencil eraser that is positioned between keys on the keyboard. The pointer moves when the pointing stick is pushed using a finger. **5.11**
Point-of-sale (POS): Terminal that records purchases at the point where the consumer purchases a product or service, serving as input to other computers that perform activities associated with sales transactions. **6.28**
Polymorphic virus: Virus that modifies its program code each time it attaches itself to another program or file; cannot be detected by an antivirus program. **12.6**
POP (Post Office Protocol): Communications technology for retrieving e-mail from a mail server. **2.32**
POP3 (Post Office Protocol 3): Newest version of POP. **2.32**
Populating: Process of entering individual records into a table. **3.17**
Port: Interface, or point of attachment, for external devices to a system unit. 4.3, 4.4, **4.25**
  keyboards, 5.5
  mouse, 5.8
  types of, 4.27-29
Portable keyboard: Full-sized keyboard that conveniently can be attached and removed from a handheld computer. **5.6**
Portable media, 7.14
Portable printer: Small, lightweight printer that allows a mobile user to print from a notebook or handheld computer while traveling. **6.22**
Portable storage medium, 7.6
Portal, *see* Portal Web page
Portal Web page: Web page that offers a variety of Internet services from a single, convenient location. Also called a portal. **2.17**
Portrait orientation: Page that is taller than it is wide, with information printed across the shorter width of the paper. **6.12**
Possessed object: Any item that must be carried to gain access to a computer or computer facility, such as badges, cards, or keys. **12.10**
Post-implementation system review: During the support phase of the SDLC, a meeting with users to determine if the information system is performing according to their expectations. **14.32**
Post Office Protocol 3, *see* POP3
Post: Process of adding an article to a newsgroup. **2.33**
Postage printer, 6.21
PostScript: Printer language designed for complex documents with intense graphics and colors, commonly used by professionals in the desktop publishing and graphic art fields. **6.18**
Power
  failures, 12.18-19
  processor, 4.8, 4.11
Power supply: Component in the system unit that converts the wall outlet AC power to DC power. **4.32,** 4.33, 8.5, 8.60
Power surge, *see* Overvoltage
Power users: Users that require the capabilities of a workstation or other powerful computer, such as engineers, architects, desktop publishers, and graphic artists. 1.28, **1.35**
  storage, 7.31
  software, 3.22
PowerBuilder: RAD tool that uses a proprietary object-oriented language called PowerScript for its application development. **15.30**
Powerline LAN, *see* HomePLC (powerline cable) network
Power-on self test (POST): Series of tests executed by BIOS to make sure computer hardware is connected properly and operating correctly; checks the various system components such as buses, system clock, expansion cards, RAM chips, keyboard, and drives. **8.6**
PowerUp: Nationwide industry partnership whose goal is to place technology in schools and community centers. **11.10**
Preliminary investigation: Occurs during the analysis phase of the SDLC, an investigation by the systems analyst to decide whether the problem or improvement identified in a project request is worth pursuing. Sometimes called feasibility study. **14.13**-15
Presentation graphics software: Software used to create documents called presentations, which are used to communicate ideas, messages, and other information to a group. The presentations can be viewed as slides, sometimes called a slide show, that display on a large monitor or on a projection screen. 1.13, 1.32, **3.18**
Pretty Good Privacy (PGP): E-mail encryption program that is freeware for personal, noncommercial users that uses a public-key encryption scheme. **12.24**
Primary cache, *see* Level 1 (L1) cache
Primary key, *see* Key field
Primary storage, *see* Memory
Print server: Server that manages printers and print jobs. **9.14**
Print spooler: Program that intercepts print jobs from the operating system and places them in a queue. **8.11**
Printer, 1.6
Printer: Output device that produces text and graphics on a physical medium such as paper or transparency film. **6.12**-22
  connecting, 4.27
  impact, 6.14-15
  label, 6.21
  large-format, 6.22
  laser, 6.16-18
  network management, 9.12
  nonimpact, 6.15-22
  photo, 6.20
  portable, 6.22
  postage, 6.21
  security, 12.26
  thermal, 6.19
Printing: Process of sending a file to a printer to generate output on a medium such as paper. **3.11**
  Internet, 6.13
Printout, *see* Hard copy
Privacy, 9.9
  CueCat and, 11.24
  government records, 11.18
  health information, 11.20
  information, 12.26-35
  laws, 12.32-33
  online shopping, 10.6, 10.16, 10.23
  online surfing habits, 12.18
Privacy, background checks, 13.19
Privacy for Consumers and Workers Act: Proposed federal law that states employers must notify employees if they are monitoring electronic communications. **12.33**
Private key encryption: Encryption process in which both the originator and recipient use the same secret key to encrypt and decrypt data. Also called symmetric key encryption. **12.16**
Problem analysis, PDLC, 15.2, 15.4-5
Procedural language: Programming language that requires that the program instructions tell the computer what to accomplish and how to do it; describes third-generation languages. **15.18**
Procedure: Instruction, or set of instructions, a user follows to accomplish an activity. **13.34**
Process: Element of a data flow diagram drawn as a circle that transforms an input data flow into an output data flow **14.17**

Processing form: Form that collects data from visitors to a Web site, who fill in blank fields and then click a button that sends the information. The script or applet executes when the button is clicked and it transmits the data to the server, processes it, and then, if appropriate, sends information back to user's Web browser via the server. **15.32**
Processor, *see* Central processing unit (CPU)
Productivity software: Software that assists people in becoming more effective and efficient while performing their daily activities; includes applications such as word processing, spreadsheet, database, presentation graphics, personal information manager, software suite, accounting, and project management. **3.7**-21
Professional organizations, 16.14
Program, *see* Computer program
Program design, 14.28
  proper, 15.8-9
  tools, 15.9-12
Program development, 15.1-41
  multimedia, 15.38-40
  object-oriented, 15.20-21
  Web page, 15.31-38
Program development life cycle (**PDLC**): During the implementation phase of the SDLC, the development of programs from the program specification package, following these six steps: (1) analyze the problem, (2) design the programs, (3) code the programs, (4) test the programs, (5) formalize the solution, and (6) maintain the programs. **14.30**, **15.2**
  coding programs, 15.2, 15.13
  formalizing solution, 15.2, 15.15
  maintaining programs, 15.2, 15.15
  problem analysis, 15.2, 15.4-5
  program design, 15.2, 15.5-12
  testing programs, 15.2, 15.13-14
Program development tool: User-friendly software products designed to assist both programmers and nontechnical users in the creation of information system solutions; automatically creating the programming language instructions necessary to communicate with the computer. **15.16**, 15.27-30
  selecting, 15.40-41
Program enhancement: Modifying existing programs to improve their functionality. **15.15**
Program files: Word processing, spreadsheet, or other executable application file. **13.5**, 13.25
  antivirus program and, 12.6
Program flowchart: Design tool that graphically shows the logic in a solution algorithm, using symbols that represent various operations in a program's logic. Also called flowchart. **15.9**-10
Program generator: A program that allows an application to be built with writing extensive code. Also called an application generator. **15.27**
Program logic: Graphical or written description of the step-by-step procedures for a module. Also called solution algorithm. **15.8**
Program specification package: Communication of program requirements to the programmer by the systems analyst; contains the relationship among each program in a process, as well as the input, output, processing, and database specifications. **14.28**, **15**.2, 15.4
Program virus, *see* File virus
Programmable logic, 4.10
Programmable read-only memory (PROM): ROM chip on which items, called microcode, can be placed permanently; once a programmer writes the microcode onto the chip, it functions like a regular ROM chip and cannot be erased or changed. **4.20**
Programmable terminal, *see* Intelligent terminal
Programmer, *see* Computer programmer
Programmer, program maintenance and, 15.15
Programmer career, 15.5, 15.41
  programmer/analyst, 16.5
Programming certifications, 16.19-20
Programming language: Sets of words, symbols, and codes used to create solutions to information system requirements. A programming language enables a programmer to communicate a solution algorithm to the computer. **15.16**
  selecting, 15.40-41
  BASIC, 15.22
  categories of, 15.16-20
  object-oriented, 15.21
  Visual Basic, 15.22-23
Programming team: Group of programmers that work on program specifications that have a large scope. **15.4**
Programs
  designing, 15.2, 5-12
  development time, 13.13
Project development team, 14.12, 14-15
Project dictionary: Contains all of the documentation and deliverables associated with a project to help everyone keep track of the huge amount of details in a system. Sometimes called repository. **14.17**
project engineer, 16.6
Project leader: One member on the project team who manages and controls the budget and schedule of the system development project. **14.5**, 16.9
Project management: Process of planning, scheduling, and then controlling the activities during the system development life cycle; the goal being to deliver an acceptable system to the user in an agreed-upon time frame, while maintaining costs. **14.5**
Project management career, 14.33
Project management software: Software used by project leaders to plan, schedule, and control development projects effectively and efficiently. **3.21**, **14.6**
project manager, 16.7, 16.9
Project notebook: Storage place for all documentation for a single project; can be an automated project notebook created using analysis and design software packages. **14.7**
Project plan: Popular tool used to plan and schedule the time relationships among project activities, usually recorded by the project leader. **14.5**
Project request: Formal request that contains the written initial request for a new or modified information system; becomes the first item of documentation in the project notebook and triggers the first phase of the SDLC: planning. Also called request for system services. **14.10**, 14.12
Project team: A team formed by the company for each system development project to work on the project from beginning to end; consists of users, the systems analyst, and other IT professionals. **14.5**
Projection operation: Relational algebra operation that retrieves data from columns (fields). **13.24**
Proper program: Program that is constructed in such a way that the program, each of its modules, and each of its control structures has the following characteristics: no dead code; no infinite loops; one entry point; and one exit point. **15.8-9**
Proprietary software: Operating system that is privately owned and limited to a specific vendor or computer model. **8.17**
Prototype: A working model of the proposed system used by many systems analysts during detailed design. The advantage of the prototype is that users can work with the system before it is completed to ensure it meets their needs. **14.28**, 15.29
Proxy server: Server outside a company's network that controls which communications pass into the company's network, functioning as a firewall that carefully screens all incoming and outgoing messages. **12.25**
Pseudocode: A condensed form of English to convey program logic that uses indentation to identify the three basic control structures; used by some programmers instead of a graphical flowcharting technique. **15.12**
Public key encryption: Encryption process that uses two encryption keys: a public key and a private key, and both are needed when encrypting and decrypting data. Also called asymmetric key encryption. **12.17**
Public key method, 12.24
Public switched telephone network (PSTN): Worldwide telephone system that handles voice-oriented telephone calls. **9.25**
Public-domain software Free software that has been donated for public use and has no copyright restrictions. **1.14**
Public-key certificate, *see* Digital certificate
Publishing: Process of making a work available to the public, including books, magazines, and newspapers. **11.22**
Publishing (Web page): Process of making a Web page available on the Internet. **1.36**
Pull technology: Obtaining information from a Web site by requesting it, which relies on a client such as a computer to request a Web page from a server. **2.23**
Purchasing
  computer, 1.23
  desktop personal computer, 8.48-53
  digital cameras, 5.20
  handheld computer, 8.55-57
  notebook computer, 8.53-55
  printers, 6.18
  software, 1.13-15
  sound card, 6.24
Push technology: Obtaining information from a Web site by having a server automatically download content to a computer at regular intervals or whenever updates are made to the site; also called Webcasting. **2.23,** 5.33

quality assurance specialist, 16.9
Quality review systems development, 14.30
Quality review: Review of the program by the programmer in order to check the solution algorithm for correctness and attempt to uncover any logic errors. **15.12**
Quarantine: Separate area of a hard disk that holds the infected file until its virus can be removed, ensuring that other files will not become infected. **12.6**
Query: Request for specific data from a database. **13.15**
Query by example (QBE): Query feature that has a graphical user interface. **13.17**
Query language: Simple, English-like statements used to specify data to display, print, or store; enables users and programmers to retrieve data from database tables. **3.17**, **13.16**, **15.19**
Queue: Location in buffer where multiple print jobs line up. **8.11**
QWERTY keyboard: Name given to a standard computer keyboard because the first six leftmost letters on the top alphabetic line of the keyboard spell QWERTY. **5.5**

Radio
  broadcast, 9.35
  cellular, 9.36-37, 9.38
Radio chat: Chat where music is played during the chat. **9.7**
RAID (redundant array of independent disks): Group of two or more integrated hard disks, often used by networks and Internet servers to duplicate data, instructions, and information to improve data reliability. **7.14**
RAM (random access memory): Memory chips that can be read from and written to by the processor and other devices; a type of volatile memory. Two basic types of RAM are dynamic RAM and static RAM. **4.16,** 7.3
  operating and, 8.4
  requirements, 4.18-19
  types of, 4.18
RAM cache, *see* Memory cache
Rambus® inline memory module (RIMM): Type of memory module that houses RDRAM chips. **4.18**
Random access, *see* Direct access
Range check: Validity check that ensures that an entered number is within a specified range. **13.9**

Rapid application development (**RAD**): The concept of developing software throughout the system development process. A common approach used in RAD is prototyping, which is the development of a working model of the proposed system. **14.28**, **15.29**
Reading: Process of transferring data, instructions, and information from a storage medium into memory. **7.4**
Read-only memory, ***see*** **ROM**
Read-only privileges: Database access privileges that allow a user only to retrieve data, but not make any changes. **13.19**
Read/write head
  floppy disk drive, 7.7
  hard disk, 7.11-12
RealPlayer, 16.23
Real-time: Describes process of people conversing online at the same time. **2.35**
Recalculation, 3.13-14
Receiving device: Communications system device that accepts data, instructions, or information. **9.2**
Reciprocal backup relationship: Relationship with another firm who will provide space and sometimes equipment to the other firm in case of a disaster. **12.21**
Record (database): Group of related fields. **13.5**
Record (hierarchy of data): Row in a table that contains information about a given person, product, or event. **3.16**
Records: Process of writing data, instructions, and information on a CD-ROM. **7.20**
  adding, 13.6
  changing, 13.6-7
  database, 13.20
  deleting, 13.8
Recovery plan: Part of a disaster recovery plan, the actions to be taken to restore full information processing operations. **12.21**
Recovery utility: DBMS utility that uses logs and/or backups to restore a database when it is damaged or destroyed. **13.20**
Red Hat Certified Engineer (RHCE), 16.18
Reference software: Software that provides valuable and thorough information for all individuals; includes encyclopedias, dictionaries, health/medical guides, and travel directories. 1.30, **3.31**
Reformatting hard disk, 12.6
Refresh rate: The speed that a monitor redraws images on the screen, which should be fast enough to maintain a constant, flicker-free image; measured in hertz. Also called vertical frequency or vertical scan rate. **6.9**
Regional ISP: ISP that provides access to the Internet through one or more telephone numbers local to a specific geographic area. **2.5**
Registers: High-speed storage locations contained in the processor that temporarily hold data and instructions. **4.7**
Registry: In Windows, several files that contain the system configuration information. Windows constantly accesses the registry during the computer's operation for information such as installed hardware and software devices and individual user preferences for mouse speed, passwords, and other user-specific information. **8.6**
Relation: Name given by a developer to a file in a relational database. **13.22**
Relational algebra: Relational database process that uses variables and operations to build new relations, in order to manipulate and retrieve data. **13.24**
Relational database: Database that stores data in tables that consist of rows and columns. Each row has a primary key and each column has a unique name. **13.22-**25, 13.33
Relational database systems, design, 14.27
Relationship: Connection within the data in a relational database. **13.22**
Remarks: Documentation of program code internally in the program. Also called comments. **15.13**
Removable hard disk: Disk drive in which a plastic or metal case surrounds the hard disk so it can be removed from the drive; also called a disk cartridge. **7.13**
Repetition control structure: Used in structured design, a control structure that is used when one or more actions are to be performed repeatedly as long as a certain condition is met. Each repetition sometimes is called a loop. Two forms of the repetition control structure are the do-while and do-until. Also called iteration control structure. **15.8**
Repetitive stress injury (RSI), ***see*** **Musculoskeletal disorder**
Research, home users and, 11.3
Replace: Feature that substitutes existing characters or words with new ones. **3.9**
Report generator: Database feature that allows a user to design a report on the screen, retrieve data into the report design, and then display or print the report. Also called report writer. **13.19**, 15.19, 15.27
Report writer, ***see*** **Report generator**
Repository, ***see*** **Data dictionary**
Repository, ***see*** **Project dictionary**
Request for information (RFI): A less formal method used to request information about a product or service. **14.23**
Request for proposal (RFP): Summary of technical requirements, sent to prospective vendors and used by vendors to select the product(s) that meets the requirements and then quote the price(s). **14.23**
Request for quotation (RFQ): Summary of technical requirements for a specified product(s), sent to prospective vendors and used by vendors to quote a price for the specified product(s). **14.22**
Request for system services: Formal request that contains the written initial request for a new or modified information system; becomes the first item of documentation in the project notebook and triggers the first phase of the SDLC: planning. Also called project request. **14.10**
Research, SDLC, 14.22
Rescue disk, ***see*** **Emergency repair disk**
Resolution: Description of the sharpness and clearness of an image. The higher the resolution, the better the image quality. **5.20, 6.8**
  ink-jet printers, 6.15
  laser printer, 6.17
  monitors, 6.8-9
  scanner, 5.26
Resources: Hardware devices, software programs, data, and information that can be shared by users on a network. **1.16**
Restore: Copying backed up files to their original location on the computer in the case of a system failure or the discovery of corrupted files. **12.19**
Restore program: Utility program that reverses the backup process, restoring backed up files to their original form. **8.30**
Resume, online, 16.5
Revenue stream: Method a business uses to generate income. **10.8-**11
Ring network: Network topology that consists of a cable that forms a closed ring, or loop, with all the computers and devices arranged along the ring. Data travels from device to device around the entire ring, in one direction. When a computer sends data, the data travels to each computer on the ring until it reaches its destination. Used for LANs, and to connect mainframes to WANs. **9.17**
RISC (reduced instruction set computing): Design used by CPU that reduces the instructions to only those used more frequently. **4.6**
Ritchie Dennis, 15.25
Robot: Computer-controlled device that can move and react to feedback from the outside world. **11.30**
ROLAP: Online analytical processing programs that use relational databases. **13.37**
Rollback: DBMS recovery utility that uses a log to undo any changes made to the database during a certain period. Also called backward recovery. **13.20**
Rollforward: DBMS recovery utility that uses a log to re-enter changes made to the database since the last save or backup. Also called forward recovery. **13.20**
ROM (read-only memory): Memory chips storing data, instructions, or information that only can be read, not modified; the data is recorded permanently on the chips. ROM is nonvolatile memory, meaning its contents are not lost when power is removed from the computer. **4.20,** 7.3
  embedded operating systems, 8.25
  starting computer and, 8.5-6
Routers: Devices that packets travel along during Internet transmissions. **9.19**
Row: Name given by a user to a record in a relational database. **13.22**
RPG (Report **P**rogram **G**enerator**):** Nonprocedural programming language developed in the early 1960s; originally designed to assist businesses in generating reports, but also is used today by businesses for complex computations and file updating. **15.26**
RSA encryption: Powerful public key encryption technology used to encrypt data transmitted over the Internet. **12.17**
Run time errors: Intentional errors or effort to make the program fail while it is running using test data; made by a programmer in order to test the program. **15.13**

Safeguards: Protective measures taken to minimize or prevent computer security risks. **12.2-**21
Sales, career opportunities, 16.10
Satellite
  communications, 9.38
  global positioning systems and, 9.10-11
Saving: Process of copying a items from RAM to a storage medium such as a floppy disk or hard disk. **3.10, 4.18**
Scanner, ***see*** **Optical scanner**
Schedule feasibility: Measure of whether the established deadlines for the project are reasonable. **14.6**
Schools, computers in, 1.3
Science, computers used in, 11.21-22
Scope: The goal, objectives, and expectations of an information system development project. **14.5**
Screen: Display device that consists of a projection surface. **6.4**
Screen saver: Utility program that causes a monitor's screen to display a moving image or blank screen if no keyboard or mouse activity occurs for a specified time period. **8.31**
Script: An interpreted program that runs on the client; a script runs on the user's computer instead of running on a Web server. **15.32**
Scripting language: An interpreted language that typically is easy to learn and use, such as JavaScript, VBScript, and Perl. **15.34**
Scrolling: Process of moving different portions of a document on the screen into view. **3.9**
SCSI, ***see*** **Small computer system interface**
SDRAM II, ***see*** **Double data rate SDRAM**
Search, ***see*** **Find or search**
Search engine: Software program used to find Web sites, Web pages, and Internet files. **2.14**, 13.28, 14.22
Search text: Word or phrase entered in a search engine's text box; used to find a Web page or pages. Also called keywords. **2.14**
Searching, database, 13.16-18
Secondary storage, ***see*** **Storage**
Sector: Small arc on a disk that can store up to 512 bytes of data. **7.8**
Secure Electronic Transaction (SET): Security protocol that uses a public-key encryption to secure credit-card transaction systems. **12.24**
Secure HTTP (S-HTTP): Security protocol used to choose an encryption scheme for data that passes between a client and a server, requiring both the client and server have digital certificates. **12.24**
Secure HTTP, 12.23

Secure server: Web server that prevents access to a system by unauthorized users, providing security for customer's making purchases from e-retailers. **10.20**
Secure site: Web site that uses encryption techniques to secure its data. **12.23**
Secure Sockets Layer (SSL): Security protocol that provides private-key encryption of all data that passes between a client and a server, requiring the client have a digital certificate. **12.24**
Security, 7.14
  backup procedures, 12.19-20
  cable modem and, 9.29
  data, 13.19
  disaster recovery, 12.21-22
  DSL and, 9.29
  e-commerce, 10.20
  e-form and, 13.18
  e-mail, 12.24
  fiber-optic cable, 9.34
  firewalls, 9.20, 12.24-25
  hardware, 12.13
  information theft, 12.15-17
  Internet, 12.22-26
  network, 9.12
  online shopping, 10.6, 16, 20-21
  operating system and, 8.16
  risks and safeguards, 12.2-21
  software theft, 12.14-15, 14.26
  system failure, 12.18-19
  unauthorized access and use, 12.7-13
  viruses, 12.2-7
Seitzer, Dieter, 10.15
Selection control structure: Used in structured design, a control structure that tells the program which action to take, based on a certain condition. When the condition is evaluated, its result is either true or false. Two types of selection control structures are the if-the-else control structure and the case control structure. **15.7**
Selection operation: Relational algebra operation that retrieves data from certain rows (records) using the criteria a user specifies. **13.24**
Sending device: Communications system device that initiates an instruction to transmit data, instructions, or information. **9.2**-4
Sequence control structure: Control structure that shows one or more actions following each other in order. Actions include inputs, processes, and outputs; used in structured design. **15.7**
Sequential access: Process of reading or writing data consecutively, used in tape storage. **7.26**
Serial port: Interface that connects devices to the system unit by transmitting data one bit at a time; used for a device that does not require fast data transmission rates, such as a mouse, keyboard, or modem. **4.27**
Server: Computer that controls access to the hardware and software on a network and provides a centralized storage area for programs, data, and information; sometimes called a host computer. **1.21, 2.6, 8.15, 9.14**
  database, 13.29
  dedicated, 9.14
  processors, 4.10
  secure, 10.20
  Web, *see* Web server
Service B2B: E-commerce site that uses a network to provide one or more services to business such as financing, warehousing, or shipping. **10.5**
Service and repair technician, 16.10-11
Servlet: Short program executed inside of another program that runs on the server. **15.32**
Session cookie: Cookie used by online shopping sites to keep track of items in a shopping cart. **12.29**
Shareware Copyrighted software distributed free for a trial period; if wanted beyond that period of time, the user sends a payment to the person or company that developed the program. **1.14**
Shopbot, *see* Shopping bot
Shopping, online, 10.2, 10.15, 11.13-14
Shopping bot: Web site that searches the Internet for the best prices on a product or service. Also called shopbot. **10.15**
Shopping cart: Method that allows a customer at an electronic storefront to collect purchases. **2.25, 10.12**-13, **11.14**
Shortcut: Icon on a desktop that runs a program when it is clicked. **8.14**
Shortcut menu: Menu that displays a list of commonly used commands for completing a task related to the current activity or selected item; also called a context-sensitive menu. **3.6**
Short-range decision, *see* Tactical decision
Shugart, Al, 7.7
Shutter: Piece of metal on a 3.5 inch floppy disk that covers an opening in the rigid plastic shell; when a floppy disk is inserted into a floppy disk drive, the drive slides the shutter to the side to expose a portion of the disk. **7.6**
Shuttle-matrix printer: Line printer that moves a series of print hammers back and forth horizontally at incredibly high speeds, as compared to standard line printers. **6.15**
Signature verification system: Biometric device that recognizes the shape of a handwritten signature, as well as measure the pressure exerted and the motion used to write the signature. **12.12**
Simulations: Computer-based models of real-life situations, used to help students learn skills in hazardous, emergency, or other situations. **11.7**
Single edge contact (SEC) cartridge: Chip package that connects to the motherboard on one of its edges. **4.4**
Single inline memory module (SIMM): Type of memory module where the pins on opposite sides of the circuit board connect together to form a single set of contacts; typically use SDRAM chips. **4.18,** 7.13
Single-user license agreement: Software license that specifies a user's responsibility in using and copying the software upon acceptance of the agreement. Also called an end-user license agreement. **12.14**
Single user/single tasking: Operating system that allows only one user to run one program at a time. **8.8**
Single-session: Disc on which additional data, instructions, and information can be written to only once. **7. 21**
Site license: Agreement that gives a software buyer the right to install the software on multiple computers at a single site. **9.11, 12.15**
Slide show: Presentations that are viewed as slides. **3.18**
Small computer system interface (SCSI): High-speed parallel port used to attach SCSI peripheral devices such as disk drives and printers to the system unit. **4.29, 7.13**
Small office/home office (SOHO): Any company with fewer than 50 employees, as well as self-employed people that work out of their homes. 1.28, **1.31**
  MFDs, 6.27
  storage and, 7.5, 7.31
Smart card: Medium that stores data on a thin processor inserted into a card that is similar in size to a credit card. Two types of smart cards are an intelligent smart card and a memory card. **7.29**
Smart pager, *see* Web-enabled pager
Smart phone, *see* Web-enabled cellular telephone
Socket: Opening on a motherboard where the processor chip is inserted. **4.12**
Software
  careers, 16.4-6
  certifications, 16.18
  custom, 14.20, 15.3
  license agreements, 14.26
  packaged, 14.19-20, 15.3
  SDLC, 14.21-26
  theft, 14.26
software engineer, 16.6
Software engineering: Refers to the entire system development process by some IT professionals; it can describe the programming process. **14.2**
Software engineering (**SE**) programs: Programs that stress the theoretical side of programming, with emphasis on systems programming versus applications programming. Also called computer science (CS) programs. **16.13**
Smart software: Software with built-in intelligence. **11.28**
Society, computers and, 11.1-37, 12.1-35
Soft copy: Information on a display device. **6.4**
Software, *see* Computer program
Software application, *see* Application software
Software engineer, 4.35
Software package: Specific software product, such as Microsoft Word, which can be purchased, but also packages that are available as shareware, freeware, and public-domain software. These packages, however, usually have fewer capabilities than retail software packages. **3.2**
Software piracy: Unauthorized and illegal duplication of copyrighted software. **11.36, 12.14**-15
Software platform, *see* Operating system
Solaris™: Version of UNIX developed by Sun Microsystems that is a network operating system designed specifically for e-commerce applications. **8.25**
Son, Masayoshi, 2.25
Solution algorithm: Graphical or written description of the step-by-step procedures for a module. Also called program logic. **15.8**, 15.11
Solutions providers, 14.21
Sort: Process of organizing a set of records in a particular order, such as alphabetical or by date. **3.17**
Sound Blaster, 6.24
Sound card: Expansion card that enhances the sound-generating capabilities of a computer by allowing sound to be input through a microphone and output through speakers. 2.26, 4.4, **4.23,** 5.14, 6.24
Source: Element of a data flow diagram drawn as a square that identifies an entity outside the scope of the system that sends data into the system or receives information from the system. Also called agent. **14.17**
Source document: Original form of a document to be processed. **5.24**
Source program: Program containing the assembly language code; needs to be translated before the computer can understand or execute the source program. **15.17**
Spaghetti code, 15.9, 16
Spam: Unsolicited e-mail or newsgroup posting sent to many recipients at once. **2.37, 10.25, 12.31**
Speaker-dependent software: Voice recognition software that works by having the computer make a profile of a user's voice. The user speaks words into the computer repeatedly, causing the software to develop and store a digital pattern for the words. **5.14**-15
Speaker-independent software: Voice recognition software that has a built-in set of word patterns, meaning the computer does not have to be trained to recognize a user's voice. **5.15**
Speakers: Audio output device that produces sounds. 1.6, **6.23**
Specialist ASP, 3.36
Speech recognition, *see* Voice recognition
Speed
  access times, 4.22
  bus, 4.30
  cache, 4.20
  processor, 4.8, 11
  RAM and, 4.19
  storage device, 7.4
Spelling checker: Feature that reviews the spelling of individual words, sections of a document, or the entire document. **3.9**
Spider: Used by search engines, a program that reads pages on Web sites in order to create a catalog, or index, of hits. Also called crawler, or bot. **2.14**
Spike: Momentary overvoltage that can cause immediate and permanent damage to hardware. **12.18**

Spoiler: Internet message that reveals a solution to a game or ending to a movie or program. **2.37**
Spooling: Process of operating system sending print jobs to a buffer instead of sending them immediately to the printer; allows the processor to interpret and execute instructions while the printer is printing documents. **8.11**
Spreadsheet software: Software that organizes data in rows and columns and performs calculations on this data. The rows and columns collectively are called a worksheet. 1.13, **3.13**-15
Spyware: Program placed on a computer without a user's knowledge that secretly collects information about the user and sends the information to some outside source while the user is online. **12.31**
SRAM, *see* Static RAM
SSE instructions (streaming single-instruction, multiple-data instructions): Technology included in Intel processors that further improves the processor's performance of multimedia, the Web, and 3-D graphics. **4.11**
Stand-alone computer: Desktop computer that can perform the information processing cycle operations (input, process, output, and storage) without being connected to a network; most also have networking capabilities. **1.21**
Stand-alone operating system: Operating system that is complete and works on a desktop or notebook computer; some, called client operating systems, also work in conjunction with a network operating system. **8.17**
Standards: Sets of rules and procedures that a company expects employees to accept and follow. Having standards helps people produce consistent results. **14.4**
Star network: Network topology where all the devices in the network connect to a central computer, thus forming a star. **9.18**
Starting computer, 8.4-6
StartUp folder: Folder that contains a list of programs that open automatically when a computer boots. **8.6**
Static RAM (SRAM): Chips that are faster and more reliable than any variation of DRAM chips; they do not have to be re-energized as often as DRAM chips, however, SRAM is much more expensive than DRAM. **4.18**
Stealth virus: Virus that infects a program file, but still reports the size and creation date of the original, uninfected program. **12.6**
Steering committee: Decision-making body in a company; participates in the system development life cycle. **14.5**, 14.12, 14.14-15
Stock trading, online, 10.2, 11.16
Storage: Device that holds items such as data, instructions, and information for future use. Storage is nonvolatile, meaning items in storage remain intact even when power is removed from the computer. Also called secondary storage, auxiliary storage, permanent storage, or mass storage. **1.5,** 7.1-3, **7.4**-31
  audio files, 5.16
  compact discs, 7.17-25
  DVD-ROM, 7.24
  enterprise storage system, 7.27
  floppy disks, 7.4, 6-9
  hard disks, 7.10-16
  high-capacity disks, 7.9-10
  memory vs., 7.2
  microfiche, 7.30
  microfilm, 7.30
  miniature mobile, 7.28-29
  online, 7.16, 7.17, 7.22, 10.11
  PC Card, 7.28
  tape, 7.26
  video files, 5.21
Storage area network (SAN): High-speed network that connects storage devices. **7.27**
Storage device: Device that records and retrieves items to and from a storage medium; often functions as a source of input because it transfers items from storage into memory. **1.7,** 1.9, **7.4**
Storage medium (media is the plural): The physical material on which a computer keeps data, instructions, and information; examples are floppy disks, hard disks, compact discs, and tape. **7.4**
Storefront, *see* Electronic storefront
Stored program concept: The role of memory to store both data and programs. **4.16**
Storing: Control unit operation that writes the result to memory; part of the machine cycle. **4.5**
Strategic decisions: Decisions that focus on the company's overall goals and objectives. **13.32**
Streaming: Process of transferring data in a continuous and even flow, allowing users to access and use a file while it is transmitting. **2.20**
Streaming audio: Data transfer that allows sound (data) to be listened to as it downloads to a computer. Also called streaming sound. **2.21**
Streaming cam: Web cam that shows moving images by sending a continual stream of pictures. **5.23**
Streaming sound, *see* Streaming audio
Streaming video: Data transfer that allows recorded or live video images to be watched as they download to a computer. **2.22**
Striping: RAID storage design that splits data, instructions, and information across multiple disks in an array, improving disk access times, but not offering data duplication. **7.14**
Structure: General description of the records and fields in a table, including the number of fields, field names, field sizes, and data types. **3.16**
Structure chart: Chart used by programmers to represent program modules graphically. Also called hierarchy chart, or top-down chart. **15.6**
Structured analysis and design: Technique that attempts to address the problem of the systems analyst for documenting the findings from analyzing a system and identifying user requirements, using graphics and other tools. **14.15**
Structured design: A technique that builds all program logic from a combination of three control structures: sequence, selection, and repetition. **15.6**-8
Structured English: A style of writing that describes the steps in a process, used to write the details of the process. **14.18**
Structured flowcharts: Design tool that graphically shows the logic in a solution algorithm. Structured flowcharts are designed to represent each of the three basic control structures. Also called Nassi-Schneiderman (N-S) charts. **15.12**
Structured Query Language (SQL): Query language used to manage, update, and retrieve data. **13.25**, 15.19
Structured walkthrough: Popular review technique that is a step-by-step review of any deliverable in the SDLC to identify errors **14.30**
Studio camera: Stationary digital camera used for professional studio work. **5.19**
Stylus: Input device that looks like a ballpoint pen, but uses pressure, instead of ink, to write text and draw lines; originally called a pen or electronic pen. **5.13,** 5.17, 8.56
Subclasses: Lower levels of a class. **15.20**
Submenu: Menu that displays when a user points to a command on a previous menu. **3.5**
Submission service: Web-based business that offers a package for a fee to register with hundreds of search engines. **2.29, 10.25**
Subscribe (mailing list): Process of adding an e-mail name and address to a mailing list. **2.34**
Subscribe (newsgroup): Process of saving a newsgroup in a newsreader for easy future access. **2.34**
Suite: Collection of individual applications sold as a single package; typically includes word processing, spreadsheet, database, and presentation graphics applications. 1.13, 3.27, **3.20,** 8.49
  utility, 8.27
Summary report: Management information system report that consolidates data, so it can be reviewed quickly and easily and usually contains totals, tables, or graphs. **13.36**
Sun Certified Architect for Java Technology, 16.20
Sun Certified Programmer, 16.21
Sun Microsystems, 9.19, 15.36
Symantec, 12.23
Super video graphics array (SVGA): Video standard that supports resolutions and colors in the VGA standard. **6.10**
Superclass: Higher-level class. **15.20**
Supercomputer: Fastest, most powerful, and expensive computer that is capable of processing more than 12 trillion instructions a second; used by applications requiring complex, sophisticated mathematical calculations. **1.26**
SuperDisk™ drive: High-capacity disk drive developed by Imation that reads from and writes on a 120 MB or 250 MB SuperDisk™; used in notebook computers and some digital cameras. 7.9, **7.10**
Superscalar: Computers that can execute more than one instruction per clock cycle. **4.8**
Supply chain: Interrelated network of facilities and distribution methods that obtain materials, transforms materials into finished products, and delivers the finished products to customers. **10.7**
Support phase: Fifth phase in the SDLC that consists of providing ongoing assistance for an information system and its users after it is implemented. Four major activities in this phase are conducting a post-implementation system review, identifying errors, identifying enhancements, and monitoring system performance. 14.2, **14.32**-33
Surfing the Web: Process of jumping from one Web page to another. **2.12**
Surge protector: Device that uses special electrical components to smooth out minor noise, provide a stable current flow, and keep an undervoltage from reaching the computer and other electronic equipment. Also called surge suppressor. **12.18**-19
Surge suppressor, *see* Surge protector
Swap file: Area of a hard disk used for virtual memory, so called because it swaps (exchanges) data, information, and instructions between memory and storage. **8.10**
Symbolic address: A meaningful name that identifies a storage location, in assembly languages. **15.16**
Symbolic instruction codes: Meaningful abbreviations and codes for program instructions, used in assembly languages. Also called mnemonics. **15.16**
Symmetric key encryption, *see* Private key encryption
Synchronize: Process of transferring information between a handheld computer and a desktop computer so the same information is available on both computers. **3.20**
Synchronous: Real-time live communications. **9.7**
Synchronous DRAM (SDRAM): Chips that are much faster than DRAM chips because they are synchronized to the system clock. **4.18**
Syntax: Set of grammar and rules in a programming language that specifies how to write the instructions for a solution algorithm. **15.13**
Syntax error: Type of error that occurs during programming testing when the code violates the syntax, or grammar, of the programming language. **15.13**, 15.18
Synthesizer: A peripheral or chip that creates sound from digital instructions. **4.28**
System: A set of components that interact to achieve a common goal. **14.2**
System board, *see* Motherboard
System bus: Bus that is part of the motherboard and connects the processor to main memory. **4.30**
System clock: Small chip used by the CPU to synchronize, or control the timing of all computer operations. The system clock generates regular electronic pulses, or ticks that set the operating pace of components in the system unit. **4.8**
System development life cycle (**SDLC**): A set of activities developers use to build an information system. **14.2**
  analysis phase, 14.2, 13-21
  design phase, 2. 21-30, 14.21-30, 15.3
  guidelines for, 14.3-4
  implementation phase, 14.2, 14.30-32, 15.3

  initiation of, 14.10-11
  participants, 14.3, 14.4-5
  planning phase, 14.2, 14.12
  support phase, 14.2, 14.32-33
System enhancement: Modifying or expanding an application system; returning to the planning phase of the SDLC. **14.33**
System failure: Prolonged malfunction of a computer that also can cause loss of hardware, software, data, or information. **12.18**
System files: Specific operating system files that BIOS searches for during startup. **8.6**
system programmer, 16.9
System proposal: Presentation of the system proposal given by the systems analyst to the steering committee to communicate alternative solutions for a system development project; the goal being to assess the feasibility of each alternative solution and then recommend the most feasible solution. **14.19**
System software: Programs that control the operations of a computer and its devices, serving as the interface between a user, the application software, and the computer's hardware. Two types of system software are the operating system and utility programs. **1.12, 3.3, 8.2**-31
  memory and, 4.16
  operating systems, see Operating systems
  role of, 3.3-4
  utility programs, see Utility programs
System unit: Box-like case that houses the electronic components of the computer used to process data, protecting the internal electronic components of the computer from damage. Sometimes called a chassis, the system unit is made of metal or plastic and protects the internal electronic components from damage. Sometimes called the chassis. **1.6, 4.2,** 8.5
  buses, 4.29-32
  components, 4.1-35
  CPU, 4.5-13
  expansion slots and expansion cards, 4.23-25
  floppy disk drive, 7.6
  memory, 4.15-22
  mobile computers, 4.33
  ports, 4.25-29
System virus, *see* Boot sector virus
Systems analyst: Person who designs a software program by working with both a user and a programmer to determine the desired output of the program. **1.14**, **14.5**, 16.9, 16.11
  analysis phase, 14.15-19
  program maintenance and, 15.15
Systems flowchart: Flowchart that shows how other elements of the system interact with a major process; shows methods and procedures. **14.28**
systems integrator, 16.4
Systems test: Verifies all programs in an application work together properly. One of three different tests that system developers perform during the implementation phase. **14.30**

T1 line: Most popular T-carrier line, used by businesses to connect to the Internet and service providers to connect to the Internet backbone. **9.27**
T3 line: T-carrier line equal in speed to 28 T1 lines, used by large companies, telephone companies, and service providers connecting to the Internet backbone; also used by the Internet backbone itself. **9.27**
Table: Name given by a user to a file in a relational database. **13.22**
Tables: Data organized in rows and columns. **3.16**
Tactical decision: Decision that applies specific programs and plans necessary to meet stated objectives. Also called a short-range decision. **13.33**
Tags: Special codes used in HTML that specify how text and other elements display in a browser and where the links lead. Also called markups. **2.29, 15.31**
Tape: Storage media that is a magnetically coated ribbon of plastic capable of storing large amounts of data and information at a low cost; one of the first storage media used with mainframe computers. **7.26**
Tape cartridge: Small, rectangular, plastic housing for tape. **7.26**
Tape drive: Drive that reads from and writes data and information on a tape. **7.26**
Tape library: High-capacity tape system that works with multiple tape cartridges for storing backups of data, information, and instructions. **7.27**
Tax preparation software: Software that guides individuals, families, or small businesses through the process of filing federal taxes. The software offers money saving tax tips, designed to lower tax bills. **3.28**
T-carrier line: Any of several types of digital lines that carry multiple signals over a single communications line. **9.27**
TCP/IP (transmission control protocol/Internet protocol): Technology that manages the transmission of data by breaking it up into packets; commonly used in Internet transmissions. **9.19**
Technologies
  accessible, 11.9-11
  emerging, 11.27-30
Technical feasibility: Measure of whether the company has or can obtain the hardware, software, and people needed to deliver and then support the proposed information system. **14.7**
technical writer, 16.9
Telecommuting: Work arrangement in which employees work away from a company's standard workplace and often communicate with the office using some communications technology. **1.34, 11.26**
Telemedicine: Joint effort of medical societies, the government, communications companies, and Internet service providers that provides health care professionals and consumers access to medical care through computers with videoconferencing capabilities. **11.19**-20
Telephone
  phoneline network, 9.22
  video, 9.8
Telephone call, video, 1.6, 3.33, 5.22
Telephone line
  as communications channel, 9.3
  Internet access and, 2.6
Telephone network, 25-27
Telephone outlet, 8.58
Tendonitis: Inflammation of a tendon due to some repeated motion or stress on that tendon. **11.31**
Terminal: Device that performs both input and output because it consists of a monitor (output), a keyboard (input), and a video card. Three categories of terminals are: dumb terminals, intelligent terminals, and special-purpose terminals. **6.27**-29
  intelligent, 6.28
Terminal (dumb terminal): Device with a monitor and keyboard; sometimes called a dumb terminal because it has no processing power, cannot act as a stand-alone computer, and must be connected to a server to operate. **1.25,** 6.27
Test data: Sample data that mimics data the program might process once it is in production; used with a desk check of the logic of the algorithm. **15.12**
Test plan: Part of a disaster recovery plan, the information for simulating various levels of disasters and recording an organization's ability to recover. **12.21**
Testing, certification, 16.29-30
Testing programs, 15.2, 13-14
Text: Output consisting of characters that create words, sentences, and paragraphs. **6.2**
Text (spreadsheet): Field data type that contains letters, numbers, or special characters. **3.16**
  data type, 13.5
Thermal dye transfer printer, *see* Dye-sublimation printer
Thermal printer: Nonimpact printer that generates images by pushing electrically heated pins against heat-sensitive paper. **6.19**
Thermal transfer printer, *see* Thermal wax-transfer printer
Thermal wax-transfer printer: Nonimpact thermal printer that generates rich, nonsmearing images by using heat to melt colored wax onto heat-sensitive paper. Also called a thermal transfer printer. **6.19**
Thin-film transistor (TFT) display, *see* Active-matrix display
Third-generation language (**3GL**): Procedural programming language that uses instructions written as a series of English-like words, and arithmetic notations for arithmetic operations, which simplify the program development process for the programmer. The code must be translated to machine language before the computer can understand it, using a compiler or an interpreter. **15.18**
Thrashing: Process that occurs when an operating system spends much of its time paging, instead of executing application software. **8.10**
Thread: Original article and all subsequent related replies in a newsgroup. Also called threaded discussion. **2.33, 9.7**
Threaded discussion, *see* Thread
Three-generation backup: Policy to preserve three copies of important files: the grandparent, or oldest, copy of a file; the parent, or second oldest, copy of a file; and the child, or most recent, copy of a file. **12.21**
Thumbnail: Small version of a larger graphical image that can be clicked to display the full-sized image. **2.19**
Time bomb: Type of logic bomb virus that activates on a particular date. **12.4**
Timely information: Information that has an age suited to its use. **13.30**
Title bar: Horizontal space that contains a window's name. **3.6**
Toggle key: Key on a keyboard that switches between two different states. **5.4**
Token ring: LAN technology that controls access to a network by requiring network devices to share or pass a special signal, called a token. Only the device with the token can transmit data over the network. Token ring is based on a ring topology, but can use a star topology. **9.19**
Toner: Powdered ink used in laser printers. **6.17**
ToolBook: Multimedia authoring package with a graphical user interface and uses an object-oriented approach enabling application design using objects, such as buttons, fields, graphics, backgrounds, and pages. **15.40**
Top-down chart: Chart used by programmers to represent program modules graphically. Also called hierarchy chart or structure chart. **15.6**
Top-down design: Program design method that breaks down the original set of program specifications into smaller, more manageable sections. **15.5**
Top-level domain (TLD): Contained in a domain name, an abbreviation that identifies the type of organization associated with the domain. **2.8**
Torvalds, Linus, 8.25
Touch screen: Touch-sensitive display that users interact with by touching areas of the screen. **5.12**
Touchpad: Small, rectangular pointing device that is sensitive to pressure and motion; the pointer is moved when a user slides their finger across the surface of the pad. Also called a trackpad. **5.10**
Tower model: Desktop computer that has a tall and narrow system unit that can sit on the floor vertically, if space is limited on a desktop. **1.20, 4.3**
Track: Narrow recording band that forms a full circle on the surface of a disk. **7.8**
Trackball: Stationary pointing device with a ball on its top, like an upside-down mouse. **5.10**
Trackpad, *see* Touchpad
Trade publication: Magazine written for specific businesses or industries; can be used as a source of names and vendors for application software. **14.20**
Trade school, 16.13
Trademark: Protection of a company's logos and brand names. **11.36**-37

Traffic: Communications activity on the Internet. **2.4**
Training: Process of showing users exactly how they will use the new hardware and software in the system. **14.30**
  career opportunities, 16.10
Transaction processing system (TPS): Information system that captures and processes data from day-to-day business activities; among the first computerized systems to process business data. Also called data processing. **13.35**
Transceiver: Equipment that both sends and receives signals from wireless devices. **9.35**
Transfer rate: Speed with which a line carries data and information. **9.26**
Transistor: Device that acts as an electronic switch, or gate that opens or closes the circuit for electronic signals. **4.4**
Transmission control protocol/Internet protocol, *see* TCP/IP
Transmission media: Materials or techniques capable of carrying one or more signals on a communications channel. **9.31**
  physical, 9.32-34
  wireless, 9.32, 34-39
Travel, online services for, 10.15-16
Trojan horse: Malicious-logic program that hides within or looks like a legitimate program. A certain condition or action triggers the Trojan horse. **12.4**
Trusted source: Company or person that a user believes will not send a virus-infected file knowingly. **12.2**
Tuple: Name given by a developer to a record in a relational database. **13.22**
Turnaround document: Document that is returned (turned around) to the company that created and sent it. **5.27**
Turnkey solution: Service offered by value-added resellers (VARs) that provides complete systems. The advantage of a full-service VAR is having only to deal with one company for an entire system. **14.24**
Twisted-pair cable: Transmission medium that consists of one or more twisted-pair wires bundled together, used for network cabling and telephone systems. **9.33**
Twisted-pair wire: Transmission medium that consists of two separate insulated copper wires that are twisted together, in order to reduce noise. **9.33**
Type I cards: PC Cards that add memory capabilities to a computer. **4.24**
Type II cards: PC Cards that contain communications devices such as modems.. **4.24**
Type III cards: PC Cards that house devices such as hard disks. **4.24**

UML (**Unified Modeling Language**): A technique used by many developers today that contains the standard notation for analysis, design, and documentation for the OO approach. Several CASE tools include UML notations. **15.21**
Unauthorized access: Use of a computer or network without permission. **12.7**-13
Unauthorized use: Use of a computer or its data for unapproved or possibly illegal activities. **12.7**
Uncompress: Process of restoring a compressed file to its original form. Also called unzip. **8.28**
Undervoltage: Drop in electrical supply. **12.18**
Underwriters Laboratories (UL) 1449 standard: Safety specification for surge suppression products, which allows no more than 500 maximum volts to pass through a line. **12.19**
Unicode: Coding scheme capable of representing all the world's current languages. **4.14**
Uniform Resource Locator (URL): Unique address for a Web page; also called Web address. **2.12**-13
Uninstaller: Utility program that removes an application as well as any associated entries in the system files. **8.29**
Uninterruptible power supply (UPS): Device that contains surge protection circuits and one or more batteries to provide power during a temporary or permanent loss of power. **12.19**
Universal serial bus (USB): Bus that eliminates the need to install cards into expansion slots. Devices connect to each other outside the system unit and then a single cable attaches to the USB port. The USB port then connects to the USB, which connects to the PCI bus on the motherboard. 4.38, 4.29, **4.32**
  hard drives and, 7.13
Universal serial bus (USB) port: Port that can connect up to 127 different peripheral devices to the system unit with a single connector type. **4.28**
UNIX: Multitasking operating system developed in the early 1970s at Bell Laboratories. **8.23**
  Windows vs., 8.25
Unsubscribe: Process of removing an e-mail name and address from a mailing list. **2.34**
Unzip, *see* Uncompress
Uplink: Transmission from an earth-based station to a satellite. **9.39**
Upload: Process of copying information from a computer to a Web server. **2.29**
Upward compatible (drive): Describes drives that can recognize and use newer media. **7.7**
Upward compatible (software): Product that is written for an earlier version of the operating system, but also runs with the new version. **8.17**
USB hub: Device that plugs into a USB port on the system unit and contains multiple USB ports that cables from USB devices can be plugged into. **4.28**
USB, *see* Universal serial bus
Useful information: Information that has meaning to the person who receives it. **13.31**
Usenet: Entire collection of Internet newsgroups. **2.33**
User(s): Someone who communicates with a computer or uses the information it generates; anyone for whom the system is built, such as customers, data entry clerks, and accountants. **1.4, 14.3**
  analysis phase and, 14.16, 17
  authentication, 12.8-13
  empowering, 13.33
  identification, 12.8-13
  levels of, 13.32-33
  program maintenance and, 15.15
  SDLC and, 14.3, 4
  training, 14.30
  types of, 1.28-35
User access privileges, 14.27
User group: A collection of people with common computer equipment or software interests that meet regularly to share information. **16.14**
User ID, *see* User name
User interface: Controls how data and instructions are entered and how information displays on a screen. Two types of user interfaces are command-line and graphical. 1.12, **3.4, 8.7**
User name: Unique combination of characters, such as letters of the alphabet or numbers, that identifies one specific user. Also called a user ID. **2.31, 8.16, 12.8**
User response: Instruction a user issues by replying to a question that a computer program displays. **5.3**
Utility, *see* Utility program
Utility program: System software that performs a specific task, usually related to managing a computer, its devices, or its programs; included in operating systems. Also called utility. **1.12, 3.3,** 7.15, **8.27**-31, 12.21
Utility suites: Several utility programs that are combined into a single package. **8.27**

Validation: Process of comparing data to a set of rules or values to determine if the data is correct. **3.17**, **13.9**-10
Validation rules, *see* Validity check
Validity check: Process performed by programs to analyze entered data to help ensure that it is correct. Also called validation rules. **13.9**
Valuable information: Information that is accurate, verifiable, timely, organized, useful, accessible, and cost effective. **13.30**-31
Value: Number contained in worksheet cells. **3.12**
Value-added reseller (VAR): Company that purchases products from manufacturers and then resells the products to the public, offering additional services with the product such as user support, equipment maintenance, training, installation, and warranties. **14.23**
Variables: The data elements of an object. Also called attributes. **15.20**
VBScript: A subset of the Visual Basic language that allows the addition of intelligence and interactivity to Web pages; used in Web page development. Also called Visual Basic Scripting Edition. **15.36**
Vendor B2B: E-commerce site that is a product supplier, which allows purchasing agents to use a network to shop, submit request for quotes (RFQs), and purchase items. Also called e-procurement. **10.7**
Vendors
  certifications and, 16.25, 26
  proposals, 14.23-25
  purchasing computer and, 8.51
Verifiable: Information that can be proven to be correct or incorrect. **13.30**
Vertical B2B: B2B e-commerce that specializes in a particular industry. **10.8**
Vertical frequency, *see* Refresh rate
Vertical Market ASP, 3.36
Vertical market software: Software that specifically is designed for a particular business or industry. **14.20**
Vertical scan rate, *see* Refresh rate
VESA local bus: First standard local bus, which was used primarily for video cards. **4.31**
Video: Output that consists of full-motion images that are played back at various speeds, often with accompanying audio. **2.22, 3.25, 6.3**
  streaming, 2.22
  Web cam, 1.31
  word processing software, 3.8
Video adapter, *see* Video card
Video camera, 6.3
  Web, 2.22
Video capture, *see* Video input
Video capture card: Expansion card that converts an analog video signal into a digital signal that a computer can understand. **5.21**
Video card: Expansion card that converts digital output from a computer into an analog video signal and sends the signal through a cable to the monitor, which displays an image on the screen. Also called a graphics card or video adapter. 4.4, **4.23, 6.10**
Video chats: Chats where participants can see and hear each other as they chat. **2.35, 3.32, 9.7**
Video clips, 3.18, 6.3
Video compression: Process used to decrease the size of video files that works by recognizing that only a small portion of a video image changes from frame to frame. A video compression program might store the first frame and then store only the changes from one frame to the next. The program assumes the next frames will be almost identical to the first. Before the video is viewed, the program decompresses the video segment. **5.21**
Video decoder: Card that decompresses video data; more effective and efficient than decompression software. **5.21**
Video digitizer: Device that captures an individual frame from an analog video and then saves the still picture in a file; used when an entire video clip is not needed. **5.21**-22
Video editing software: Software used to modify a segment of a video, called a clip. **3.25**

Video Electronics Standards Association (VESA): Association of video card and monitor manufacturers that develops video standards. **6.10**
Video input: The process of entering a full-motion recording into a computer and storing it on a storage medium. Also called video capture. **5.21**-24
Video projector, notebook computers and, 8.55
Video surveillance, 9.9
Video telephone call: Service using the Internet, Web browsers, and Web servers to make a telephone call using special software along with a microphone, speakers, and a video camera attached to a computer that allows both parties to see each other as they talk. **3.33, 5.22, 9.8**
Videoconference: Meeting between two or more geographically separated people who use video and computer technology and a network or the Internet to transmit audio and video data. **3.33, 5.24, 9.8**
Viewable size: Diagonal measurement of the actual viewing area provided by a monitor. **6.5**
Virtual memory (VM): Operating system allocates a portion of a storage medium, usually the hard disk, to function as additional RAM. **8.10**
Virtual reality (VR): The use of computers to simulate a real or imagined environment that appears as a three-dimensional (3-D) space. **2.22, 11.27**-28, 11.29
Virus: Potentially damaging computer program that affects, or infects, a computer negatively by altering the way the computer works without a user's knowledge or permission, copying itself into other programs and spreading through multiple computers. **3.3**-4, 8.61, **12.2**-7, 12.31
  detection and removal, 12.5-7
  types of, 12.4
Virus author: Programmer of a virus. **12.2**
Virus definition, *see* Virus signature
Virus hoax: E-mail message that warns of a nonexistent virus. **12.7**
Virus signature: Known specific pattern of virus code. Also known as a virus definition. **12.6**
Visible Systems Corporation, 14.29
VisiCalc, 3.14
Visual Basic: A Windows-based application developed by Microsoft in the early 1990s that assists programmers in developing other event-driven Windows-based applications. **15.22**, 15.29
Visual Basic for Applications (**VBA**): A macro programming language used by many applications for writing macros instead of recording them. **15.28**
Visual Basic Scripting Edition: A subset of the Visual Basic language that allows the addition of intelligence and interactivity to Web pages; used in Web page development. Also called VBScript. **15.36**
Visual programming environment (**VPE**): Programming environment that allows developers to drag-and-drop objects to build programs. **15.29**
Voice chats: Chats where participants can hear each other as they chat. **2.35, 3.32, 9.7**
Voice e-mail, 2.31
Voice input: The process of entering data by speaking into a microphone that is attached to the sound card on the computer. **5.14**
Voice mail: Service that functions much like an answering machine, allowing callers to leave a voice message for the called party. Unlike answering machines, however, a computer in the voice mail system converts an analog voice message into digital form. Once digitized, the message is stored in a voice mailbox. **9.4**
Voice mailbox: Storage location for voice mail on a computer in the voice mail system. **9.4**
Voice output: Audio output of a person's voice or a computer talking through speakers. **6.24**
Voice recognition: Computer's capability of distinguishing spoken words; also called speech recognition. **3.11, 5.14**
Voice verification system: Biometric device that compares live speech to a stored voice pattern. **12.12**
Volatile memory: Memory that loses its contents when the computer's power is turned off; includes RAM and cache. **4.16, 7.3**
Volume Business ASP, 3.36
VR, *see* Virtual reality
VR world: Entire 3-D Web site that contains infinite space and depth. **2.22, 11.27**

WAP-enabled devices: Devices that support the wireless application protocol, including telephones, pagers, and handheld computers. **9.20**
Warm boot: Process of restarting a computer that already is powered on; also called a warm start. **8.4**
Warm start, *see* Warm boot
Warranty: Guarantee that a product will function properly for a specified time. **14.23**
WAV: Waveform audio files that have a .wav extension. **5.16**
Waveforms: Windows storage format for audio files, called WAV files. **5.16**
Web, *see* World Wide Web (WWW)
Web address, *see* Uniform Resource Locator (URL)
Web administrator, 16.7
Web appliance, *see* Internet appliance
Web application: Software application that exists on a Web site and is accessed by visiting the Web site. Some companies provide access to the application for free, while others allow the program to be used for free and charge a fee only when a certain action occurs. Other companies charge only for service and support, allowing the software to be used or downloaded for free. **3.33, 10.8**
Web bar code: Bar code in printed media such as newspapers, books, postcards, and magazines; when scanned with a handheld scanner, the Web page associated with the bar code displays on the computer screen. **5.30, 11.24**
Web browser: Software used to access and view Web pages on the Internet; also called a browser. **2.9**-11, **3.32**
  cookies and, 12.28-30
  multimedia and, 2.28
  operating systems, 8.13
Web cam: Video camera with output that can be displayed on a Web page; also called a cam. **1.31, 2.22, 5.23**
  setting up, 5.24
Web community: Web site that joins a specific group of people with similar interests or relationships. **2.17**
Web conference: Conferencing system that uses the Internet, Web browsers, and Web servers to deliver this service. **9.8**
Web database: Database that links to an e-form on a Web page. **13.27**
Web developer, 10.25, 16.7
Web farming: Process of collecting data from the Internet as a source for a data warehouse. **13.39**
Web filtering software: Software that can restrict access to specified Web sites. Also called Internet filtering program. **12.35**
Web graphic designer, 16.7
Web host, *see* Web hosting service
Web hosting service: Company that assists people and companies in hosting their Web site by providing hardware, software, storage, and communications required for a Web server; some provide more sophisticated services that include managing payments and tracking inventory. Also called Web host. **2.29, 10.10, 10.19**
Web page: Electronic document on the Web that can contain text, graphics, sound, and video, as well as built-in connections to other documents. 1.18, **2.9**
  creating, 2.28, 3.26
  navigating, 2.11-12
  types of, 2.16-17
Web page authoring: Process of creating a Web site. **2.28**
Web page authoring software: Web page authoring software that allows the creation of sophisticated Web pages that include graphical images, video, audio, animation, and other special effects. Sometimes called an HTML editor. **2.28,** 3.25, **15.38**
Web page authors: Designers of Web pages who use a variety of techniques to develop Web pages, including HTML, scripts, applets and ActiveX controls. **15.31**
Web page program development, 15.31-38
Web programmer, 16.7
Web publishing: Development and maintenance of Web pages. 1.36, **2.26**-29
Web server: Computer that delivers (serves) Web pages requested by a user. **2.13, 10.10,** 10.19
Web site: Collection of related Web pages. 1.18, **2.9**
  browsing habits, 12.28-30
  computer companies, 16.6
  cookies and, 12.28-30
  creating, 2.28-29
  deploying, 2.29
  designing, 2.26-28
  evaluating value of, 11.35
  health, 11.20-21
  maintaining, 2.29
  news, 8.32-33
  planning, 2.26
  subscription fees, 10.10
  tracking visitors, 10.5, 10.24, 12.18, 12.28
Web-based training (WBT) (applications on the Web)**:** Type of computer-based training that uses Internet technology and typically consists of self-directed, self-paced instruction on a topic. **3.34, 11.6**-7
Web-based training (**WBT**) (multimedia program development): An approach to computer-based training (CBT) that uses the technologies of the Internet and the Web; used by companies to teach employees new skills or upgrade current skills. **15.39**
Web-based utility service: Service that charges an annual fee to access and use a vendor's utility programs on the Web. **8.27**
Webcaster, 16.7
Webcasting, *see* Push technology
WebCT, 11.9
Web-enabled cellular telephone: Device that allows a user to send and receive messages on the Internet and browse Web sites specifically configured for display on the telephone; sometimes called a smart phone. **1.24,** 1.32, 9.4, **9.20**
  displays, 6.6-7
  Internet access, 2.6
Web-enabled device: Handheld device that provides access to the Internet and e-mail from any location. 1.32, **9.4**
  e-commerce and, 10.3
Web-enabled pager: Two-way radio that allows a user to send and receive messages on the Internet; also called a smart pager. **1.24,** 9.4, **9.20**
Webmaster: Individual responsible for maintaining a Web site and developing Web pages. **2.29,** 2.37, 16-7
WebTV, 9.4
What-if analysis: Process in which certain values are changed in a spreadsheet in order to reveal the effects of those changes. **3.14**
Wheel: Pointing device that is a type of steering wheel, which is turned to drive a car, truck, or other vehicle. **5.11**
Whiteboard: Window on a videoconference screen that can display notes and drawings simultaneously on all participants' screens, providing multiple users with an area on which they can write or draw. **5.24**

Wide area network (WAN): Network that covers a large geographic area (such as a city, country, or the world) using a communications channel that combines many types of media such as telephone lines, cables, and air waves. A WAN can be one large network or can consist of two or more LANs connected together. The Internet is the world's largest WAN. 1.16, 1.33, **9.14**
Window: Rectangular area of the screen that displays a program, data, and/or information. **3.6**
Windows: Microsoft operating system with a graphical user interface. 1.9, 1.20, **8.18**
  desktop, 3.4-5
  features of, 8.19
  graphical user interface, 1.12
  starting computer and, 8.6
  UNIX vs., 8.25
Windows 2000 Advanced Server: Microsoft operating system designed for e-commerce applications. **8.22**
Windows 2000 Datacenter Server: Microsoft operating system used for demanding, large-scale applications such as data warehousing. **8.22**
Windows 2000 (MCSE), 16.20
Windows 2000 Professional: Upgrade to Windows NT Workstation operating system that is a complete multitasking client operating system that has GUI. **8.18**
Windows 2000 Server: Microsoft operating system that is an upgrade to Windows NT Server, used for a typical business network. **8.22**
Windows 2000 Server family: Microsoft operating system products that meet various levels of server requirements; include Windows 2000 Server, Windows 2000 Advanced Server, and Windows 2000 Datacenter Server. **8.22**
Windows 3.x: Three early versions of Microsoft Windows: Windows 3.0, Windows 3.1, and Windows 3.11 that were operating environments, not operating systems. **8.18**
Windows 95: Microsoft multitasking operating system, written to be a true operating system and take advantage of the processing speed in 32-bit processors. **8.18**
Windows 98: Microsoft operating system that was an upgrade to Windows 95 and was more integrated with the Internet, provided faster system startup and shutdown, better file management, and support for multimedia technologies and the Universal Serial Bus (USB). **8.18**
Windows-based applications programming, 15.22
Windows CE: Scaled-down Windows operating system designed for use on wireless communications devices and smaller computers. **8.25**
Windows Explorer: Windows 98 file manager. **8.18**
WINDOWS key, 5.5
Windows Me, *see* Windows Millennium Edition
Windows Millennium Edition: Upgrade to Windows 98 operating system that has features specifically for the home user; also called Windows Me. **8.20**
Windows NT: Microsoft operating system designed for client/server networks; also called NT. **8.18**
Windows NT Server: Microsoft operating system for the server in client/server networks. **8.22**
Windows NT Workstation: Microsoft client operating system that could connect to a Windows NT Server. **8.18**
WinZip, 8.28
Wireless advertising, 9.38
Wireless Application Protocol (WAP): Communications protocol that allows wireless mobile devices to access the Internet and its services such as the Web and e-mail, using a client/server network. **15.38**
wireless designer, 16.4
Wireless LAN (WLAN): LAN that connects using wireless media such as radio waves. **9.12,** 9.36
Wireless modem: Modem that accesses the Web wirelessly from mobile devices, typically by using the same waves used by cellular telephones. **9.28**
Wireless mouse, *see* Cordless mouse
Wireless portal: Portal specifically designed for Web-enabled handheld computers and devices. **2.17**
Wireless service provider (WSP): Company that provides wireless Internet access to users with wireless modems or Web-enabled handheld computers or devices. **2.6**
Wireless transmission media: Media that sends communications signals through the air or space using radio, microwave, and infrared signals. **9.32,** 9.34-39
Wizard: Automated assistant used to complete a task by asking a user questions and then automatically performing actions based on the answers; included in many software applications. **3.37**
WML (**wireless markup language**): A subset of the XML Web development language that allows Web page developers to design pages specifically for microbrowsers, such as Web-enabled handheld computers, cellular telephones, and pagers. **15.38**
World Wide Web Consortium, 15.38
Woofer: Audio output device that produces low bass sounds. **6.23**
Word processing software, 3.8-9
Word processing software: One of the most widely used types of application software; allows users to create and manipulate documents that contain text and graphics. Sometimes called a word processor. **3.8**
Word processing technician, 3.37
Word processor, *see* Word processing software
Word size: The number of bits a processor can interpret and execute at a given time. **4.30**
Word wrap: Automatic positioning of text by a program at the beginning of the next line, if text is typed that extends beyond the right page margin. **3.9**
Workplace
  computers in, 1.3
  healthy environment at, 11.30-33
  See also Ergonomics
Workgroup computing: Network hardware and software that enables group members to communicate, manage projects, schedule meetings, and make group decisions. **9.10**
Worksheet: The collection of rows and columns in a spreadsheet. **3.12**
Workstation: More expensive and powerful desktop computer designed for work that requires intense calculations and graphics capabilities. **1.21**
  processors, 4.10
World Wide Web (WWW): Also called the Web, a worldwide collection of electronic documents. **2.9**-24
  audio, 6.3
  databases, 13.28-29
  graphics, 6.3
  home users, 1.29, 11.3, 11.4-5
  multimedia on, 2.18-22
  operating system and, 8.13
  processors and, 4.11
  searching for information on, 2.14-15
  selling on, 1.37
  See also Internet
World Wide Web Consortium (W3C): Group that oversees research and sets standards and guidelines for many areas of the Internet. **2.4**
Worm: Malicious-logic program that copies itself repeatedly in memory or on a disk drive until no memory or disk space remains, causing the computer to stop working. **12.4**
Wozniak, Stephen, 8.21, 11.5
Write-protect notch: Small opening on a floppy disk with a tab that slides to cover or expose the notch, used to protect the floppy disk from being accidentally erased. **7.9**
Writing: Process of transferring data, instructions, and information from memory to a storage medium. **7.4**
Xeon™: Intel processor used in workstations and low-end servers. **4.10**
XHTML (**eXtensible HTML**): Web development language that includes features of HTML and XML. **15.37**
XML (**eXtensible Markup Language**): Web development language that enables Web page developers to create customized tags and makes it possible to define a link that points to multiple Web sites instead of a single site. **15.37**
XSL (**eXtensible Stylesheet Language**): Used by XML as its style sheet specification. **15.37**

Y2K Bug: Bug that had the potential to cause serious financial losses for computers around the world. The bug took effect when the computer date rolled over to January 1, 2000. At that time, non-Y2K compliant computers read the date as 01/01/00. Computers that used just the last two digits of a year could not distinguish 01/01/1900 from 01/01/2000, which caused some computer hardware and software to operate according to the wrong date. Also called millennium bug. **15.14**
Yahoo, 2.17
Yahoo! Store, 10.21
Yang, Jerry, 2.17, 16.13
Yes/No data type, 13.5
Yourdon, Ed, 14.15

Zero-insertion force (ZIF) socket: Socket on a motherboard with a small lever or screw that facilitates the installation and removal of processor chips; used by many PGA (pin grid array) chips. **4.12**
Ziff Davis Media, 14.9
Zip® disk: 100 MB or 250 MB disk that is read from and written on using a Zip® drive. 1.7, **7.10**
  viruses and, 3.4
Zip® drive: High-capacity disk drive developed by Iomega that reads from and writes on a 100 MB or 250 MB Zip® disk. 7.9, **7.10**
Zipped files: Compressed files that have a .zip extension. **8.28**

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